

Computer News 80

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EDITORIAL COMMENTS

Again this issue is chock-full of articles by many different authors. So much so that we are really squeezed for space. But we felt that all of it was too good to leave any out. So squeezed or not here it is.

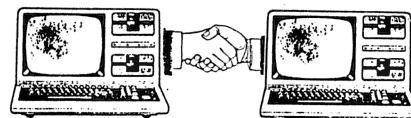
We are beginning to feel like the politician that doesn't keep his promise once he is in office. The promise we haven't been able to keep, due to all that has been happening

since the first of the year, is that we haven't been able to keep our promise to get the letters that you have been sending answered in a reasonable time. Yet, like all good politicians we are optimistic and will tell you that we are still working on the problems. You will receive replies to your questions, sooner or later, via direct mail or thru the Open Forum.

Now the good news, we have completed arrangements with Spectre Technologies to become their Exclusive Licensee to distribute the TRSDOS version of LONG & LOUD and REMBRANDT programs. Details of these two fine programs are listed in the TRS-80 Product Source. You will also find a coupon for 10% off for a single order of one or more products purchased from POWERSOFT in this issue. We hope you will take advantage of this special offer made only to CN80 subscribers by POWERSOFT. We have also included a list of the more common printer cables that can be purchased through CN80 at prices far below what Radio Shack sells them for.

We have just completed our inventory of the latest "backroom clearout" items from Radio Shack. We have a lot of COCO, Model I Programs and a few 2000 programs. There are quite a few user installed expansion boards for the 1200/1200HD in

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The Double 4D Contest Drawing is May 1st, 1989 - You still have a good chance to be a winner. Dig up a computer friend and enter!

this lot. We do expect to have more Model 3/4 items in the future, but not much is available in this lot. If you would like a list of our current inventory, please send a stamped self addressed envelope with your request for the Software Catalog and we will mail the current list to you.

We have also made arrangements with the NEW ENGLAND BUSINESS SERVICE Company, most of you know them as NEBS, to process your orders for computer forms and other products in their computer and business forms catalog at a savings of 10% to 15% off their regular catalog prices. Orders placed with CN80 for NEBS will be drop shipped to you. Concurrent with our present policies payment is to accompany all orders. If you are presently using computer forms, checks and other NEBS material we urge you to look into this cost savings opportunity provided to the readers of CN80.

BUSINESS ENVELOPES

Need business envelopes? We have developed a connection to with a volume envelope printer where we can save you money on your business envelope needs, just mail us a sample envelope and we will return all the details and prices to you.

"It pays to subscribe to Computer News 80" is one of the promises we are able to keep.

NEWS ITEMS

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During the month of February Radio Shack was selling the Model 4D for \$599.00. The lowest purchase price we found was \$515.00, shipping included, from Nocona Electronics, PO Box 593, Nocona, Texas 76255 (817-825-4027) Nocona has long been an independent Radio Shack dealer. Money Order or Certified bank check for best prices. If you are thinking of any new RS equipment, like a lazer printer (wow!) it might pay to check them out.

Talking of lazer printers from RS, they have one of the highest priced lazer printers in the industry. But one advantage might be; according to RS their lazer printer in the Tandy Mode emulates anything their dot matrix printers will do.

Which means they will operate from a Model III/4 the same as your dot matrix printer does. No need for special fonts, or programs. At that price we would want a demonstration before buying. We are told that the copying engine is manufactured by Ricoh, and would use the same supplies that the Ricoh copier would use. Not quite the same as the Cannon copier engine, which uses the simple one cartridge replacement concept. Has any of our users had any experience with the RS lazer printer, if so we would like to receive a "users" report.

Even though the Model 4D has been placed on sale again this year, there is no indication that the Model 4D is going to be discontinued by Tandy. It is still in their full line catalog and still has a very important place in their educational sales marketing plans. We won't look for their final close out sale on the Model 4D until it is dropped from their next published catalog. But who can afford one at their regular catalog price?

Aerocomp is again accepting orders for external disk drives, with the promise to ship within 6 to 8 weeks. We have placed our order with them for another dual TEAC 55B, 360K external drive unit. (A Pseudo Hard drive, and great for file manipulation.) Our one work station with this set up just couldn't keep up, so now we have/will have two work stations that can handle file manipulation without running the hard drives all the time. Talk nice to Aerocomp and you might still get the \$20.00 rebate per disk drive. Tell them you saw it in CN80.

Coming Next Month -- We hope!

File Manipulation for Beginners Part III

T/Maker Review - but don't wait for it to take advantage of the T/Maker special offer in this issue. It is really a superb integrated program.

More Basic Programming tips.

A larger Open Forum again, some answered questions and some for you to answer.

Don't miss it! Check your label for your last issue date. If it is 89/03 -- renew now.

PROFILE 4 PLUS (Part 2)

by Klaus Meinssen

Those of you who have followed Part 1 of PROFILE 4 PLUS have a chance now to create "Reports". Those who have not followed Part 1 (Computer News 80, November, 1988) are urged to refer to it, unless they knew enough about PROFILE to get a data base going, but haven't gotten to the creation of Reports yet. A Report is often used together with an Index. An Index is also almost always used in accessing data base records quickly. It is really no more than a numeric and alphabetic presort of all data base records by whatever field one selects. Remember "Field"? If not, refer to it's definition - and others too - in Part 1. Aside from creating Reports, we will also be going into some details of sorting and "selecting" records by Fields.

Part 1 describes how to build Indexes (Indices?). Please refer to it and build Index 1 and Index 2. They will be needed for the two Reports that will be covered here. Answer <P> after entering the filename, thereafter the Index number. Index 1 is to be sorted on Field 3 with Length of 18, i.e. across Fields 3, 4 and 2 characters of Field 5; Index 2 is to be sorted on Field 1 with Length of 6, i.e. across Fields 1, 2 and 2 characters of Field 3. Make no Selection. Both Indexes (i.e. /IY1 and /IY2) are to go on Drive 1. If it's confusing while you read this, take a look at PROFILE 4 PLUS - TABLE "A" of Part 1. and look at the Field lengths. Note, that Indexes must be rerun, whenever records have been added or deleted, not, however when they have only been updated.

O.k. then. To create a Report enter CM or RM from LSDOS or TRSDOS Ready. Toggle between them by hitting <M> and select <3> for "Define Reports". In Part 1 I have - at one time - specified "RM", when I should have specified "CM"; this is because in practice I use either, almost subconsciously, and toggle between them often. To proceed, type in the filename "STOCKMST", or whichever one you may have assigned. Press <1> for Report Number, answer <Y> for New Report, type <0> for Drive Number 0. Don't be scared by the next screen. It admittedly takes a little practice to create good Report Formats, but then that goes with anything. I suggest you simply, yet

precisely, copy the format shown in PROFILE 4 PLUS - TABLE "A" of this Part 2. To do the wavy underlining of the report heading use <CLEAR><SHIFT> and hit the <;> a number of times. Bet you didn't know that! It's just my way to be different. Check Your work and record it with <SHIFT><CLEAR>, as shown on the bottom of Your screen.

To finish this, press <ENTER> for No Control Break; press <ENTER> for 60 Print Lines Per Page, although I usually type 62 and then <ENTER>. Press <ENTER> for 66 Number Of Lines Per Page. Next type 80 and <ENTER> for 80 Characters Per Line, unless you commonly use wide printer paper, in which case you simply <ENTER> for 132 Characters Per Line. Get a Hardcopy if you want one, type <Y> or <N> for Password protection. You are done with your first Report Format.

Back at the "CM" Menu, hit <X> and return to DOS. Type DIR STOCKMST, or your filename, and <ENTER>. The extension for Report Format 1 is /PR1. Since we want to create 2 Reports, do this: at DOS Ready type COPY STOCKMST/PR1 STOCKMST/PR2:0. All your STOCKMST files should now match those in to-days PROFILE 4 PLUS - TABLE "C".

Go back to "Define Reports" (see above third paragraph) and press <2> for Report Number. The copy you just made will come up. Modify it by changing the heading part that's in parenthesis, as shown in PROFILE 4 PLUS - TABLE "B". That's the only difference between Report numbers 1 and 2. This exercise was done to let you get the feel of it. If you wish, you can now change the lay-out of Report Format 2 to the way you think you might prefer. Be advised - from experience - that report readers get used to a certain way in which columns are arranged and it's faster to scan for something if the lay-out remains constant. Finish this up by referring to the preceding paragraph.

You are now ready to print your first Reports. By now - I hope - you have created at least 6 or, better still, about 12 records to make this whole exercise worthwhile, because you want to see how Index 1 and Index 2 sorting effects the way your reports look. If you add more records

at this point, be sure to rerun your Indexes. You Notice, that Index 1 was created specifically for Report Number 1 and Index 2 for Report 2. Next hit <4> for Print Report, type in the filename, enter <1> for Report 1, enter <1> for Index Number and - with your printer on - let it run. Do the same for Report 2, by using Index 2. Your two Reports should look similar to the two shown under PROFILE 4 PLUS - TABLE "D". Pay particular attention to the way TYPE and SUBTYPE were sorted in Report 1 and the way BIN and ISLE were sorted in Report 2. Imagine now, that we are dealing with several hundred Records, covering many pages. It'll be impossible then to find a given product and it is then when the benefits of sorting become truly indispensable.

An Index, such as 1 or 2, is not really mandatory for sorting of Fields. It will, however, cause printing to begin immediately. If a sort is needed by a different Field - say Field 7, i. e. by "Trade" - , do this: after entering the Report Number 1 or 2, hit <ENTER> at the prompt for Index Number. Next, look for Field number 7 for "Trade", <ENTER> again, and at the question "Enter Field Number To Sort", answer with <7>. <ENTER> a few times until sorting begins. At the end of the sort the Report comes up with the "Trades" in sorted order. The Report Description (in parenthesis) under the Heading will then not apply.

Now, suppose you want to have a print-out of only one "Trade", you will have to make a selection. Repeat the previous paragraph, but enter Field 3 "Type" as the sort field and <ENTER>. Also <ENTER> 18 for "Enter Length For Sorting". At the question "Enter Selection Field Number" type in <7> and <ENTER>. The word "TRADE" will come up and you are being prompted to type in a Trade. Just type in and <ENTER> the first 3 or 4 characters of a Trade, that's all that's needed. <ENTER> once more at the question "Enter Relationship (EQ,NE,etc.)". Also <ENTER> at "Enter Connective (AND,OR,ENTER)". It will now sort and search all records and your Report will come up the way you specified it.

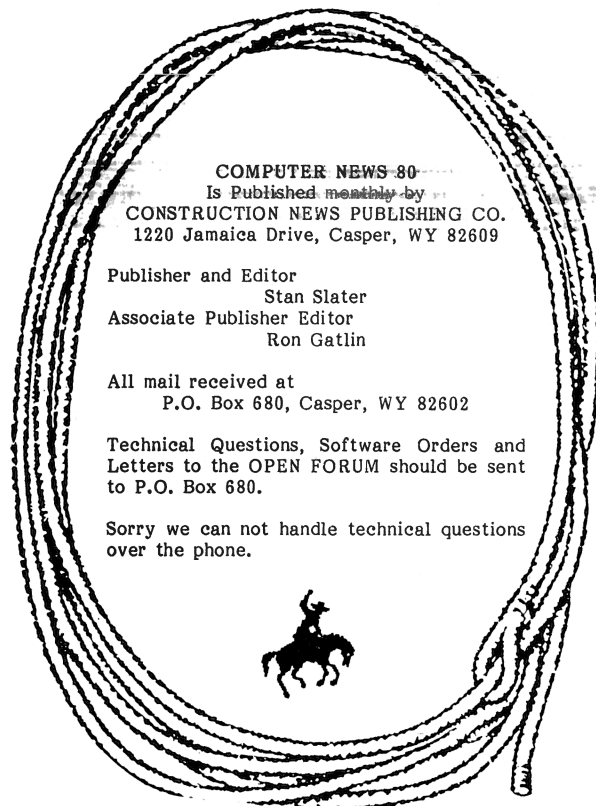
There is much more to sorting and selecting of Records. It will be covered in one of the future installments. Our next installment,

Part 3, will cover the creation of a custom "Menu" for quick access of only STOCKMST files and tasks. You will then hardly be using "RM" anymore. Even those who have been using PROFILE 4 PLUS may benefit from it.

Experienced readers of my articles are being asked their patience in regards to my frequent use of <ENTER> and other simple key entries. Judging by the correspondence I receive, I find, that there are a lot of folks out there who need precise instructions all the way. I can tell from my own experience, that there are a few articles where I wish other writers would have been more precise in their step by step procedures that they write about.

Again: GOOD LUCK!

Klaus Meinssen
124 Fairway Avenue
Verona, N.J. 07044



PROFILE 4 PLUS - TABLE 'A'

1	2	3	4	5	6	*** 7	8
0	0	0	0	0	0	0	0
STOCKMASTER UNITS REPORT							
~~~~~							
Page No. #		(Rpt 1 - By Type)				Date: /	
ISLE	BIN	TYPE	SUBTYPE	DSCR1	DSCR2	TRADE	AVAILABLE RECNO
-----							
*1	*2	*3	*4	*5	*6	*7	*26 @RN

PROFILE 4 PLUS - TABLE 'B'

1	2	3	4	5	6	*** 7	8
0	0	0	0	0	0	0	0
STOCKMASTER UNITS REPORT							
~~~~~							
Page No. #		(Rpt 2 - By Isle & Bin)				Date: /	
ISLE	BIN	TYPE	SUBTYPE	DSCR1	DSCR2	TRADE	AVAILABLE RECNO

*1	*2	*3	*4	*5	*6	*7	*26 @RN

PROFILE 4 PLUS - TABLE 'C'

Drive :0 STOCKMCM 40 Cyl, DDEN, Free = 43.50K / 180.00K, Date 01-Sep-88									
Filespec	MOD Attr	Prot	LRL	#Recs	EOF	File Size	Ext	Mod Date	Time

STOCKMST/DA2		FULL	256	0	0	0.00K	0		
STOCKMST/DA3		FULL	256	0	0	0.00K	0		
STOCKMST/DAT		FULL	256	0	0	0.00K	0		
STOCKMST/MAP		FULL	256	1	255	1.50K	1	9-Oct-88	12:07a
STOCKMST/MTH		FULL	256	4	255	1.50K	1	8-Oct-88	12:26a
STOCKMST/OLM		FULL	256	1	255	1.50K	1	8-Oct-88	12:17a
STOCKMST/PM1		FULL	256	9	255	3.00K	1	8-Oct-88	1:16a
STOCKMST/PR1 +		FULL	256	8	255	3.00K	1	14-Jan-89	12:01a
STOCKMST/PR2 +		FULL	256	8	255	3.00K	1	14-Jan-89	12:07a

=====

9 files of 32 selected, 13.50K

Drive :1 STOCKMRM 40 Cyl, DDEN, Free = 85.50K / 180.00K, Date 01-Sep-88									
Filespec	MOD Attr	Prot	LRL	#Recs	EOF	File Size	Ext	Mod Date	Time

STOCKMST/IX1		FULL	27	8	215	1.50K	1	14-Jan-89	12:13a
STOCKMST/IY1 +		FULL	27	8	215	1.50K	1	14-Jan-89	12:04a
STOCKMST/IY2 +		FULL	13	8	103	1.50K	1	14-Jan-89	12:05a
STOCKMST/KEY		FULL	255	6	249	1.50K	1	14-Jan-89	12:12a

=====

4 files of 15 selected, 6.00K

PROFILE 4 PLUS - TABLE 'D'

STOCKMASTER UNITS REPORT

Page No. 1

(Rpt 1 - By Type)

Date: 01/15/89

ISLE	BIN	TYPE	SUBTYPE	DSCR1	DSCR2	TRADE	AVAILABLE	RECNO
D	122	HAMMER	CLAW	12 OZ	WOOD HDLE	CARP	50.	1
A	33	PLIERS	NEEDLE	NOSE	KOREAN MADE	MECH	12.	3
E	120	PLIERS	SNAPRING	"NIFTY"	HEAVY DUTY	MECHA	24.	4
E	123	PLIERS	WIRECUTG	HEAVY DT	INSULATED	ELECT	36.	2
R	12	SAW	JEWELERS	48 TOOTH	HARDENED	HOBBY	36.	5

RECORDS SELECTED 5

STOCKMASTER UNITS REPORT

Page No. 1

(Rpt 2 - By Isle & Bin)

Date: 01/15/89

ISLE	BIN	TYPE	SUBTYPE	DSCR1	DSCR2	TRADE	AVAILABLE	RECNO
A	33	PLIERS	NEEDLE	NOSE	KOREAN MADE	MECH	12.	3
D	122	HAMMER	CLAW	12 OZ	WOOD HDLE	CARP	50.	1
E	120	PLIERS	SNAPRING	"NIFTY"	HEAVY DUTY	MECHA	24.	4
E	123	PLIERS	WIRECUTG	HEAVY DT	INSULATED	ELECT	36.	2
R	12	SAW	JEWELERS	48 TOOTH	HARDENED	HOBBY	36.	5

RECORDS SELECTED 5



A VISIT WITH DAVID GOBEN

RECOVERY OF SCRIPSIT PRO TEXT FILES

In my last visit with you I presented a program that would recover SuperSCRIPSIT text files that would refuse to load into the SuperSCRIPSIT word processor for a variety of reasons, such as bad sectors, corrupted file index, or whatever. In the visit before that I presented a program to fix bad sectors in Disk Scripsit files to make them once more readable by that word processor. During my visit this month I will present you with a program that will do the same for Scripsit PRO text files. Unlike the previous two installments that would operate on the Model I, III, or 4 (and cousins), the program this month will work only on the Model 4/4P/4D. This makes sense, since Scripsit PRO is only available on the Model 4/4P/4D.

There are two forms of "crashes" with Scripsit PRO (henceforth called SPRO): 1) computer, and 2) text file. When the computer crashes, it is normally in the form of a system lockup (things just STOP working), or the computer reboots (DOS Ready pops up). If the system locks up while you are working with a SPRO text file, you can reboot by pressing the orange RESET button (black switch on the 4P). This brings you back to DOS Ready. If the system simply reboots while you are working on a file, then it has provided you with (in this case) this unwanted service automatically. With SPRO, this is not the disaster that you might first think. In MOST cases (I say MOST because sometimes a computer reboots because of a momentary power failure, which, if it lasts longer than a second, you will find all data erased) the text is STILL intact in memory. If you desire to recover it, you can use the RESCUE/CMD utility which is provided on the SPRO disk. This will take the memory-resident text and save it in the MOVE/CTL file. Once this is done you can create a new file and RECALL the text into it (Refer to Appendix C of the SPRO manual).

This type of recovery is possible because like Disk Scripsit, the entire text document is loaded into memory when you work on it. With really huge documents, it provided a convenient CHAINing feature that linked

several documents into one, even in mid-page.

The other type of crash; text file corruption, usually spelled disaster to the SPRO user. Until now, recovery of such files was thought to be impossible. But like most impossible things, the solutions ends up being quite simple.

INNARDS OF SCRIPSIT PRO TEXT FILES

I discovered while digging around inside SPRO text files that SPRO uses very FEW special codes. Like SuperSCRIPSIT, the first sector of a SPRO document contains special information concerning the text file, such as filename, printer driver used, line spacing, page length, starting header and footer pages, author, operator, and comments. In addition, it also contains the previous and next link in the document chain, if they exist. Unlike SuperSCRIPSIT, however, SPRO text files do not use an INDEX, since SPRO documents will load entirely into memory, and will NOT load just portions of its text into memory at a time. Additionally, the special codes that SPRO embeds in the text file are not as numerous as those used by SuperSCRIPSIT. Thus scanning the text file using a recovery program is MUCH simpler. In fact, the recovery program for SPRO that I present this month is a CUT-DOWN version of the SuperSCRIPSIT recovery program.

A SPRO text file is identified by the first byte in the file being the hexadecimal (hex) value E1 (note: all values will be in hex). This allows SPRO, when attempting to load a file, to quickly check to see if the file is INDEED a SPRO text file. Following that byte are the various information codes and text which appear on the OPEN DOCUMENT screen. At relative byte D2 of this first sector the text file begins. The first bit of data may seem a bit cryptic because this initial information is in fact text format control bytes, beginning with EE, and ending, 26 bytes later, with ED. The 25 bytes between EE and ED set up tabs, line spacing, centering, indents, margins, flags, and other complicated aspects of text formatting. This data will control all text that follows UNTIL another format command is encountered, where another 27 bytes will be set aside to store format information from that point on (until ANOTHER is encountered, ad nauseum). Thus, for all

PRACTICAL purposes, text does not begin until offset byte ED of that sector.

Tabs are marked by the code E0. Alignment tabs are coded as E1. A delta mark (representing 2 spaces) is marked by the code E9. Code EA marks the CLEAR key code. This is followed by the special printer format symbols, such as "-" for underlining, or whatever else you use the CLEAR key command for. Code EC represents an INSERT mark. When you are inserting text, a number of spaces are opened up. If you have the VIEW mode on (CTRL-V), you will see these marked as a line of small graphics blocks. Code EF marks the NEW PAGE code. Code F8 represents a SPACE at the end of the DISPLAY line, forcing line wrap-around. This code helps SPRO to quickly format the video screen. When format changes are put into effect by the writer, these codes are replaced by spaces (code 20), the text is rearranged, and whatever spaces will THEN by at the end of each line will be converted to F8 codes. Code FA marks a "soft" hyphen. These are inserted when you use the block hyphenate command. These can be deleted easily if you decide to disable text hyphenation. (A HARD hyphen is one that you manually insert by pressing the "-" key in the normal text edit mode.) Code FD marks the end of a paragraph. Code FF marks the end of the text. It might be of interest to note that any header or footer will follow this marker.

RECOVERING SCRIPSIT PRO FILES

If you have a SPRO text file that refuses to load, then type the Program Listing into Disk BASIC, save it to a file called SPREC/BAS, and RUN it. It will ask you for the name of the file to recover. Answer this prompt with the name of the file that is giving you trouble. Answer the next prompt with the name of the file that you wish the recovered text to be saved to. DO NOT use the same name for both. The program will then go about recovering your file. For reassurance, it will display the text as it recovers it. Once completed, it will report any errors it detected with the original file by reporting the number of errors (these would be due to unreadable sectors). Also, if the CLEAR key code were used anywhere, it will tell you that it replaced the CLEAR key code with the sequence ##\$.

The recovered file will be saved in ASCII format. This is no great problem with SPRO. Once SPREC/BAS is finished recovering your text file, go into SPRO and open a NEW file, set up any line formats if they differ from the default, then type CTRL-R to enter the RECALL command. Answer the prompt with the name of the ASCII file (the recovered text file name) and press ENTER. SPRO will load the ASCII file and convert the text to the proper SPRO format. You have now recovered your "lost" file.

SMALL BUG FIXES FOR T62DOSXT

In an effort to provide the widest possible support to users of T62DOSXT (the Date Extender for TRSDOS 6.2 to take it through Dec 31, 1999), and provide complete bug updates, I am asking CN80 to publish this list of bugs and fixes so that its readers who have purchased this package may benefit both from their product and from their loyalty to their magazine.

For all Registered T62DOSXT users:

I have been amazed how little the T62DOSXT package has changed since I first developed it. However, I have found a some SMALL bugs in the package.

FOR USERS WITH SERIAL NUMBERS -BELOW- T620038:

This bug is the only one that may affect you, IF AT ALL. No biggie, but it sometimes confuses the @GTMOD routine, which is internal to the DOS, and most of you will never have to worry about it. Unfortunately, SOME of the various Harddisk drivers use it to locate a self-installed module, and if you use COMM/CMD, it will report that COM/DVR is not installed even if it is. The fix is simple, and EASY to install.

To fix it, once you have created a new, updated system disk using T62DOSXT, place that system disk into Drive :0 and boot it up normally. From the TRSDOS Ready prompt, enter the following command EXACTLY:

PATCH BOOT/SYS.LSIDOS (D0C,3F=3E
10:F0C,3F=F3 0F)

**FOR USERS WITH SERIAL NUMBERS
-BELOW- T620044:**

This bug is so minor that it will not affect you until the year 1996. There is a small bug in the Day-Of-Week calculations, so that after December 31, 1995, the day of week (Sun, Mon, Tue, etc) will be inaccurate. No big deal to most of you (the DATE will still be accurate), but why not make EVERYTHING accurate? The patch is SIMPLE, and is only two lines. From TRSDOS Ready, just type:

```
P A T C H   S Y S 0 / S Y S . L S I D O S
(D0D,C0=07:F0D,C0=03)
P A T C H   S Y S 7 / S Y S . L S I D O S
(D05,C1=07:F05,C1=03)
```

Another bug is in the file SCROLL/FIX. Somehow no-one has reported this bug for as long as T62DOSXT has been out. I discovered it by accident when I was verifying all the patches after upgrading the JCL patch files to include the fixes above. The bug is on the patch line that begins with D0A,FA=. The last two byte values show 9D 0D. These SHOULD be 9E 0D. Use a text editor to correct this, if you plan to use it.

**FOR USERS WITH SERIAL NUMBERS
-BELOW- T620055:**

There is a minor bug in SYS3/SYS after it has been converted. The following patch will correct it:

```
P A T C H   S Y S 3 / S Y S . L S I D O S
(D03,27=39:F03,27=38)
```

OTHER FIXES:

Though unreported, I have fixed a bug in DOS that has existed since the LDOS days. That is; the leap-year flag update when using DATE to change the year. It is so minor that only ONE user had reported it to LSI. LSI never fixed it. Another fix was to move my patch which allowed JCL processing to continue even after a SYSTEM (SYSTEM=d) command (where 'd' is a drive number). In a recent conversation with Roy Soltoff of MISOSYS, Inc, he informed me that a problem can occur in VERY RARE instances where a user might 'stack' commands; that is, enter more than

one SYSTEM command at a time in a SINGLE line. No one reported this, so you probably never did this before anyway.

Another unreported bug is in the UNFIXCPY/FIX file. On the 2nd patch line, with the code starting with "(D0C,3F=", the "F" (find) portion of the line reads ":F00,3F=", and SHOULD be ":F0C,3F=".

Finally, starting with serial number T620038, I began shipping version 1.4 of ONEPASS in the package. This has been enhanced to speed disk recognition, and will not 'hang up' on disk with 'strange' formats, such as MS-DOS and CP/M.

If you WOULD like to have your disk re-cut to its latest format, please send the disk back to me in a disk mailer of equal quality as the one I sent you (but please, not chewed up by the dog or sealed with three rolls of tape), and include \$5 (US) for the re-mastering service. Also include \$1 for postage. If you live outside the USA and do not have a USA zip code, send an extra dollar for the extra foreign postage.

Until next time, HAPPY COMPUTING!

— David Goblen

(You can contact David personally by sending a self-addressed stamped envelope to 28 Monticello St, Willimantic, CT 06226)

TWO PATCH FOR PRODRAW PLUS[®]

a copyrighted program published by Ted Carter of Micro-Labs, Richardson, Texas
by Arthur N. McAninch, Jr.

This FIX will patch DRAW/LOD of the PRODRAW program by GRAFYX SOLUTIONS so that you may obtain a Directory of drives 0-7 instead of only 0-3.

(Note: the last patch is only cosmetic so that on Exit, LS-DOS Ready is displayed instead of TRSDOS Ready)

Apply this patch by issuing the command
DO FIXPDRAW from TRSDOS/LS-DOS Ready

PATCH DRAW/LOD (X'94D2'=37)
PATCH DRAW/LOD (X'9760'=37)
PATCH DRAW/LOD (X'9788'=37)
PATCH DRAW/LOD (X'AEFF'=4C 53 2D)
EXIT

This patch will allow you to obtain Disk Directories of Drives 0-7 from within SAVLOAD/CMD when utilizing either the (L)oad or the (S)ave command.

Apply by issuing the command
PATCH SAVLOAD/CMD SAVLOAD
from TRSDOS/LS-DOS Ready

D02,61=37
F02,61=33
D04,23=37
F04,23=33
Eop

THE MODEL ONE CORNER

MODEL 1 TRS-80 MODIFICATIONS by Donald W. Ady

Last month this column covered some things about using DOS. This month is for special hardware items: gold contacts, lower case letters, density doubling, and the sound miniamplifier.

The Model 1 system with disk earned a notorious reputation for glitches. Mysterious hangups and nervous breakdowns. The culprit is unreliable contact on the circuit board card edge connector for external cable attachment. Mainly the problem is in the 40 pin connector between the keyboard and EI (Expansion Interface). Tin solder contacts get oxidized, then get "noisy". When this happens, cleaning helps, but not enough. Other connections are less of a problem when their use is intermittent: for disk, printer, modem, and the extra 40 pin card edge used by some accessories. Of these, the disk connector is the most critical.

Fortunately there is a hardware add on, still available, called GOLD PLUG 80. This almost completely stops the contact

glitches! You can get information or place orders to E.A.P. Co., still in business at PO Box 14, Keller TX 76248 - phone (817) 498-4242. If you already have the GOLD PLUG add ons, they can be identified by red print on white plastic saying EAP CO. The plugs fit over the existing card edges and are soldered on. If you have at least moderate soldering skill and nerve to open up the equipment, then I recommend at least three plugs: keyboard to EI, and the disk connector. A side benefit at the keyboard plug: it ends up by making the RESET button easy to reach.

Some units of other Tandy machines suffer similar contact glitches, to a lesser degree. EAP also sells adapters for Model 3, Model 4, COCO, and Tandy 1000 series. One other EAP product is a printer ribbon reinking spray, containing diluted ink.

The Model 1 keyboard as supplied lacks lower case. A number of kits and wiring diagrams came out to cure this, and Radio Shack itself at least used to provide the option as an extra. I'll mention here how I did it with a soldering iron. Connections involve three IC chips: Z30 (74LS02), Z73 (74LS32), and Z63 (2102, AN-4L). IC pin numbers go around from #1, marked with a dot on the chip. Four jumpers and one circuit board cut are required. When working, a good precaution is grounding strap on your wrist to avoid sparks that might zap the IC's. Disclaimer: I have lost the documentation, but have a clear work sketch with no notes. Having looked at my board again, it seems from my now dubious eyesight to follow the sketch. Before pitching in, you should have some skill and confidence to even undo the changes if they don't work out. I'm unskillful myself, and I made it look like a real mess. By luck it worked anyhow, after having overheating an IC and replacing it, into an added socket.

First you will have to remove six screws from the bottom of the keyboard: note the three different lengths. Lift off the top. Carefully note the arrangement, then remove the assembly from the case. When opening up the "hinge", carefully note where the cushioning washers go. They will fall out and bounce down into your hot air register or something if you don't watch out.

Be careful not to flex the cable to the key assembly more than you have to. A bad design. The broad thin film copper leads, visible as a "sandwich" in clear plastic insulation, break easily, with tiny microcracks. I had a dreadful problem with some of mine that broke. They conducted with the meter on them, but not when encased. It took awhile to figure any way to catch the intermittent breaking red handed. The flat cable had to be bent just so to open up a break. Then I could see which ones needed a parallel wire jumper for a fix.

Trace how pin 13 of Z30 connects to Z60 #4 and to Z27 #13. You will need to connect the trace leaving Z30, before it branches. The cut separates Z30 #13 from the other two, which are still joined electrically on the far side of the cut. Put jumpers on each end of the cut, somewhere along the circuit paths. Connect the jumper from Z30 #13 to Z73 #13. Run the other jumper to Z73 pin #11, which connects to Z60 #4 and Z27 #13. Now add a third jumper from Z73 #12 to Z63 #12, and a fourth Jumper from Z63 #11 to Z60 #5.

When everything is assembled again, and if working, you will be able to type lower case when running by a toggle keying. Hold down <SHIFT> and tap the <0> digit key. If typed a second time, you will toggle back to upper case only. On TRSDOS 2.3, you may need to go back to upper case only when typing commands. Lower case of course will help if typing ordinary text with a word processor.

Double density disks require a new chip in the EI called a density doubler. The installation can also run single density such as TRSDOS 2.3. A double density DOS (not TRSDOS 2.3) is needed to format and otherwise use this storage. My own doubler is an early PERCOM DATA model. AEROCOMP (see ads in CN80) is the only current source I know about for doublers. The instructions here apply for the PERCOM chip, and presumably for others. First remove the EI cover. It is best to wear a grounding strap on your wrist and to use IC puller tweezers. Find the largest chip on the IC board, which has 40 pins. My own was the Western Digital FD1771B-01 single density drive controller. Identify pin #1 on the EI socket and on the new chip.

#1 usually would have a dot marking it. Unplug the old chip, without bending its pins. Plug it into the socket of the density doubler, then plug the piggy back assembly into the old socket. The last step is the hardest, because you can't see very well where the pins are going. Do not force it until you know it is right, because bent pins must then be straightened for a retry.

When booting, only the original (now piggy backed) single density chip is switched in. The system diskette itself, double density or not, has a single density track zero. If the rest of the tracks are double density, then the file BOOT/SYS on the system disk's track zero will get the double density chip switched in.

If you have tapes and a CTR-41 cassette, you may want to use them. If you don't have disk, tape if it does work will beat typing each time by hand! Printer listing backups are important for marginally reliable tapes. Programs available only on tape can be transferred to disk by special utilities. My own cassette does not work any more, but I had done the transfers wanted already. Many tapes or recorders are hard to use, and are a source of aggravation.

The hookup uses the cassette cord with DIN plug and three jacks. This is addressed in software as port number 255. Spare ports found on the EI unit are usually also mapped as #255. Turn off the computer first. Plug in the DIN plug at the back of the keyboard - marked CASSETTE. Plug in the cassette's wall plug. The black jack goes into the EAR connection on the recorder, the large grey one into the AUX connection, and the small grey jack into the REM connection. A loose dummy plug placed in the MIC jack can avoid unwanted voice pickup for RECORD mode.

Basic program files can be read or written in simple sequence on the tape, or can be named with one letter or digit like "A" or "1", with enclosing quotes. To load a program tape, set the volume control in range 4-6. If not set just right, it won't work! Often, resetting the volume at a usable level takes many frustrating experiments. Tapes load under Basic control, so you must be in Basic. Depress the PLAY button on the CTR-41 and type

<CLOAD>* on a rewind tape to load the first program; <CLOAD"A">* would look for a named file "A", as the tape advances forward only. To record a file, depress both PLAY and RECORD buttons. <CSAVE>* records the program in memory, of <CSAVE"B">* also names the file as "B". When loading or saving, a cursor asterisk blinks if the process is working. A READY message announces completion.

Some tape programs are in machine language, not Basic. These load in a different way. Type <SYSTEM>*. In response to question mark '?', Type the filename without quotes such as <A>*. If the load is successful, you will see '?' again. Type a slash and then the execution address of the object file. Documentation is needed to get the address.

Basic programs also can use cassette data files with PRINT # and INPUT # statements.

Simple sound production can be done with a miniampifier such as an inexpensive battery operated one that has been sold by Radio Shack under the Archer label. Use the CASSETTE jack on the back of the keyboard, with the DIN plug of the cassette cord plugged into it. If the cassette is plugged in, disconnect it. Plug in the larger grey jack into the miniampifier. Basic or machine language sound routines signal the cassette port. Timed voltage signals produce the sound, most often as a pure monotone. The port address is 255.

Voltage surges on 110 volt lines will bother most users seldom or never. Some circuits get twitched by washing machine motors and other things that go bump in the night. It is probably worthwhile to get an inexpensive voltage suppressor. Radio Shack and other places sell them. You can get (limited) protection too against lightning surges. The device might avoid glitches or worse. If you use a power strip, it may have its own surge suppressor built in, or you can plug it into one. Computer salesmen have been known to blame all problems on power surges, a handy catchall scapegoat. Not so often what the problem really is. Real surges cause real problems, depending on the intensity and duration, which vary all over the place.

Disks ought not be in the drives when power

is shut down. That can happen if you are forgetful, careless, or have a sudden household power failure. Maybe worst of all is when power goes OFF and ON again quickly. Some drives seem to be more risky than others this way. An unusual but simple device was put together here from several parts and seems to prevent the losses: an electromagnetic relay switch that keeps power OFF drive :0 until manually turned on. The main difference between this and no extra device at all: power can't come back on quickly, and not until you want it. The switch connects power to drive :0 through a relay that is normally OPEN. The relay is closed by a momentary ON pushbutton that connects power to a magnet relay. Once closed, the relay is powered through the closed switch contact itself. If power goes off, the coil lets go, the contact opens, and only the pushbutton will power drive :0 again.

The Radio Shack power supplies sometimes will blow a fuse. No big deal, except for one thing. The @&#!* case is sealed! To replace it, UPLUG if first of course. Slit open the square seamline along the bottom with a utility knife or chisel. Putty knives also help in prying off the cover when broken loose. You will probably find it necessary to replace the fuse holder. The way I have done it is to drill holes and to mount a screw cap holder wired to the OUTSIDE, carefully insulating bare leads with black tape. Black tape can also hold the case back together. Read the old fuse rating and replace it with one of the same amperage.

Model 1 keys sometimes get dirty and quit typing. It is quite easy to pry off the cover plastic, tilting up the front with a small screwdriver. If you do the space bar though, watch carefully how it comes apart - a somewhat tricky mounting. Various kinds of solvents or contact sprays may be used to help get the contacts working while you tap the internal pillar to open the tiny spring fingers. Several times a year on some newly fractious keys, I use a liquid cleaner, rubbed on gently with a small screw driver tip. Swabs or other ungentle cleaning touches are bad news, as I learned the hard way. By breaking some spring contacts in some keys. Had to replace the <:> by a junk pile key with jury rigging. The bad <7> key was an easier deal: use the SPARE ONE on

the numeric keypad for <7> or shifted <'>.
— Donald W. Ady

PROGRAMMING IN BASIC Part Two

by Donald W. Ady

This month's column is the second in a series about the Basic programming language. Please follow hands on the computer if you read this. Note the asterisks '*' after typing context or <*> alone mean tap <ENTER> key.

Statements as already mentioned are made by typing them with a line number in front. <AUTO>* types line number digits for you, until <BREAK>. EDIT is the command to change a line without retyping it in full. First, something about Basic shorthand. TRSDOS 2.3 has only one shorthand thing, which is <?> for PRINT to display on the video, as in <?"HELLO">*. Many systems let you use one letter only for commands LIST, EDIT, or DELETE, and let a period, the "dot" <.>, stand for the current line. For instance <L10>*, <D.-100>* deletes lines 10-100. <L200>*, <D.>* deletes the one line. <L300->* lists tail of program, 300 on.

<L10>*, <D10>* or <L10>* then <D.> will LIST then DELETE line number 10. <E20>* or <L20>*, <E.> starts EDIT for line 20. MICROSOFT'S EDIT has its harsh critics. Personally, I think EDIT is just great, within its limitations, for something compactly coded in the ROM. EDIT works on one Basic line at a time. This may be up to 240 characters long with several statements. Colons separate statements that may share the same line. Model 4 Basic allows 250 bytes in a line.

What to EDIT? You could do it on anything at all that you can type after a line number, even without knowing any BASIC. If you don't RUN it, Basic won't care and it could serve for EDIT practice. People even used to use Basic this way to write notes or letters to their friends - before the day of the word processor. When reading the text they just ignored the line numbers. Type it as you go, or SAVE a file and LOAD it to reuse again for more practice whenever wanted. You can UNDO the changes and

reuse the same line over if you want. In fact you can SAVE any lines you want on a Basic filename for EDIT practice. Unless typing workable Basic (or trying to), use a new filename. Using the filename of a working program to SAVE some practice junk - will replace and wipe out that program unless you have it SAVED on a separate disk in a safe place.

<10 X=1>* is a way to start. <E10>*. This starts EDIT on that line. It hides the end of line, showing only <10 > with one space after the line number. The action point cursor is the first hidden letter. Tap the <L> LIST key or <LL> twice whenever needed to clearly see what is what. It displays in full, then repeats the <10> display. Don't use <*> except as noted unless you want to record the line as-is. Entry always ends EDIT. As a brief diversion, a note about ESC (escape). On the TRS-80 this control takes two keys, <Shift> and <Up Arrow> together. ESC is the only way besides terminating entry to end an INSERT. Commands that start inserting are <I> INSERT, <H> HACK, or <X> EXTEND. While inserting other subcommand keys don't work. A bug of EDIT: once in awhile you must retype ESC for it to "take".

Having typed <E10>*, and <L>, type <X> EXTEND and <:Y=2>. Try ESC, and when it takes, <L>, <X>, <:Z=3>* with entry to record the line <10 X=1:Y=2:Z=3>. Now delete and insert. <E10>*, then <DDD> to see <10 !X!=!!3!>, with each DELETE byte marked with exclamations. UNDO it. <A> is the UNDO command that does not quit EDIT. Type <AL> with the <L> key also to LIST the result clearly. Now, the form nD with a number: <3D> instead of <DDD> deletes the same thing in one step showing <10 !X=1!>. Use <L> again if you want to see it better. For midline insertion after something else, do NOT use <L>. To start inserting, <I>, then <X=1> to replace the deletion, type ESC, and <L>.

Positioning: experiment and use <A> to UNDO if wanted. First tap the space bar repeatedly to go forward. Tap <Left Arrow> to go backward. And, use a number before the space or arrow, eg <7><Space>. If the number is too big, it only goes to the line end or beginning. For long lines you can take a guess and then do a few more single

taps. There is a better way yet! SEARCH by nSc. <L>, then <S:> or <1S:> finds the next colon. <2S:> or <3S:> finds the second or third. This is also good for deleting with nKc, the KILL command. <K:> or <1K:> delete from cursor up to (not including) first next colon. <K> all by itself will delete to the end of the line, since it can't find the nothing context (but tries).

Bug: EDIT lets you INSERT in lines until they are just a little too long to use - if SAVED they won't LOAD! The line buffer holds 240 bytes maximum, including some you can't easily count on the display. A safe condition: <L>, <232><Space> should land at least on end of line. Sometimes a few more bytes go in and sometimes not. Typing hits a "dead spot" when a line is first typed. Sometimes it goes "dead" a few bytes too late in an EDIT. If "dead", hit <Left Arrow> before entry.

<H> HACK is handy to replace any part of the end of the line. It works like the accidental <K> with no context, but does not mark deletion and does automatically start INSERT. <L>, <2S:>, <H>, <:A=4>* would record a change from the old end <:Z=3> (deleted) to <:A=4> (inserted). CHANGE, nC, would work with a count to do the same thing: <L>, <SZ>, <3C> then <A=4>* replacing <Z=4> after the colon. <C> is not an insertion, except you must type the full count. Or, one at a time like <CAC=C4> to get Z=4. To avoid entering and quitting with <H>, ESC is needed. That covers EDIT. If you practice and know what to watch for, EDIT works very well. Too bad, but EDIT can NOT duplicate, splice, or divide lines or shuffle parts of one around.

As you go along with a little programming of your own or look at programs someone else wrote, EDIT is a good tool to help find out the routes the program takes, what it does, and how to fix mistakes. To do that, insert STOP or PRINT statements on the end or middle of lines already there. For line 100 for instance: <E100>*, <3S:>, <I>, <STOP:>* would insert a STOP after the third colon. When RUN, if line 100 executes, it will then STOP. Then you can type <?X> or <?Y> or <?A\$> for instance to find out what has now become of some variables called X, Y, and A\$. To start up again, <CONT>*; <RUN>* could also be used, or you can force the program to

change its route by maybe <GOTO 50>* instead of <RUN>*. Instead of the <STOP:>* insertion, you could have inserted <?"X,Y,A\$","X,Y,A\$:>*. That would make it PRINT on the fly with a reminder message <X,Y,A\$> first, with no STOP.

When fixing errors with some tool like this to help find out where they are, it is called "DEBUGGING". How come? In early days of World War II, early computers had huge circuits with some hot, bare, 110 volt wires. Some of them were in run down campus labs infested with cockroaches. These "bugs" would crawl into a computer, step on the wires, fry themselves, and zap the computer! Figurative bugs inherit the name of ones with legs.

Another DEBUG tool is the TRON command. If used, the program when RUN will list all line numbers in the order executed. TRON works as a statement <TRON:> in a line, or you could type it by hand while stopped as a direct command. TROFF turns the feature off. Sometimes the screen fills up with just too many numbers and too fast to follow like <10> <20> <30> and so on for each line number done. To control it better, use <BREAK> to stop and then <CONT>*, or insert some STOP statements earlier.

From now on many Basic syntax keywords will be covered. First and least important, the LET keyword. It means "this statement is an assignment of a value to a variable". That's obvious anyway from seeing the statement with LET left out - so leave it out to save typing and memory! <10 X=1> instead of <10 LET X=1>. MICROSOFT included LET for downward compatibility to older Basic language versions on some other computers that insist on LET. The obvious END keyword (end of program) is a similar thing. You need not use it, save on some fussy non TRS-80 systems.

GOTO is an important keyword. <10 GOTO 100> means break off the execution from here and resume on line 100. GOTO should be used freely but sparingly. Indiscriminate use makes a program just about impossible to follow, like a bowl of spaghetti, going here and there and back again and who knows where. Some programming languages have been created which work "top to bottom" with GOTO highly discouraged or no such word at all! This is popular among

professors who grade student work more easily without any GOTO. They have a valid point of view, but they take it much too far. Deep down inside a computer where it runs machine language, its secret inner workings generate a whole lot of GOTO logic even for "top down programs". FOR-NEXT is a type of top down loop. In all such cases it can be replaced by GOTO logic - and in machine language it is. `X=X+1: IF X<10 GOTO 100` might send it back to the top instead of NEXT logic.

The sharp right bracket '<' above is a "relational operator", meaning 'less than'. Remember that the pointy end goes to the small item, and the open side to the larger item. `A>B` means that A is greater than B, pointing at the smaller B. Using both brackets `A<>B` means A is not equal to B. On some Basics (but not TRS-80) `A#B` or a slashed '=' is used for not equal. The equals sign is usually an assignment. It can also be in a test relation such as `IF (A=B)`.

The keyword 'IF' is a truth test used in almost all computer languages. Basic IF statements, at least the ones without a lot of consecutive tests, read enough like plain English to tell you what they mean. By the strict rules of BASIC you must use the keyword THEN after an IF to take an action for 'TRUE'. MICROSOFT Basic very often works even though you omit 'THEN'. `IF A=1 THEN GOTO 10` usually works if given as `IF A=1 GOTO 10` or with THEN and no GOTO: `IF A=1 THEN 10`. If taking such a short cut, test it. Insert a PRINT or STOP in line 10 and see if it happens. That's a simple kind of DEBUGGING. When stopped, you can execute the line with the IF in it by `<GOTO 200>*` for an IF on line 200.

TRS-80 arithmetic looks quite a lot like what one sees in simple algebra. For simple arithmetic in MICROSOFT basic you need plus '+', minus '-', times '*', and divided by '/'. `A+B-C*D/E` means add B to A, then subtract the result of multiplying C times D divided by E. The asterisk for "times" is the only unusual arithmetic operator symbol here. The whole thing is called an "expression". Sometimes there can be some doubt about which thing is done first - the division or multiplication or + or - and so on. A word of caution. The computer uses a great many "rules of precedence" about what to do first. `A+B-C*D/E` is not any

problem, but there are worse examples. Use parentheses to "force the sequence" if in any doubt! That's easier and clearer and fool proof. Only the software designer needs to get involved with the fat rule book. `(A+B) - ((C*D)/E)` is absolutely clear in the above expression. The parentheses are not needed. They would be if the computer had different precedence rules that for example did `(A+B+C)*(D/E)` in the above example.

When using a number of terms, parentheses are a good idea to make the meaning clear for reading later. `X=(A+B+C-D)/10` is a simple example.

Instead of writing `X*X` or `X*X*X` to square X or cube it, you can use the "exponentiation" symbol, typed with the up arrow key: `X[2` or `X[3`. The video or printer symbol is the square bracket, except on Model 1 video. This exponentiation symbol is almost universal for Basic on other computers. FORTRAN and other languages often use two asterisks instead, like `X**2`. Almost any signed or unsigned integer or decimal constant or expression for an exponent will work. `X[N` or `X[.5` (square root) are simple examples. But there are number limits on the TRS-80. `10[38` or `10[-38` are out of range and would cause an error. `2[38` is a much smaller number that's legal. That would have far too many digits to show. It displays `2.74878E+11`, meaning `2.74878*10[11`.

Having talked about simple arithmetic, this may be the place to just cram in the mention other math keywords. They are all written in the style `KEYWORD(exp)`, where exp is a variable or expression. An expression is like one side of an algebra equation. `SIN(X)`, `TAN(X)`, `COS(X)`, and `ATN(X)` are respectively the trigonometric sine, tangent, cosine, and arctangent. X is in radians, there being two PI (`2*3.14159`) radians per 360 degrees. For other trig functions, use ratios of the above ones.

ABS returns absolute (unsigned) values. SGN returns the sign value. `SQR(X)` is the same as `X[.5`. INT, FIX, CINT, CSQL, CDBL return integer, integer, integer, single precision, or double precision numbers from any expression. FIX works without error on numbers out of the integer range such as 32768. LOG(X) gives logarithm to the

natural base "e". For base 10, $2.30259 \cdot \text{LOG}(X)$ is a rough approximation. $\text{EXP}(N)$ gives e^N . $\text{RND}(0)$ returns a number between .000001 and .999999. $\text{RND}(X)$ returns an integer between 1 and X. These pseudo-random numbers are unpredictable enough to make TRS-80 games full of interesting variations. In Model 4 Basic, RANDOM with no argument starts a new random sequence.

--Donald W. Ady

DON'T BYTE THE HAND THAT FEEDS YOU. by Charles Marks

"I can't believe that it doesn't work! It's dead! Completely dead! It worked last night, but tonight it's completely dead! Why? I'm stunned. I just don't believe it." I banged the keys, cursing under my breath, then out loud.

"Does this mean I have to bring it in for repair?"

I knew it was still under warranty but I just hated the hassle. Maybe I better call "The Doctor". I had a friend who stayed awake all night using his modem. He slept most of the day, and didn't mind the call at any hour of the night. He always seemed to know the answer to anything I would ask him, and was happy to convey any information or help if he could. I guess that's why we called him "The Doctor".

"Clean your bus terminals", he said. "HUH", I replied. "YOUR BUS TERMINALS - YOUR BUS TERMINALS", he now shouted into the phone. "Clean them with a soft, pink, rubber eraser!". "I'm not going anywhere. What the &%\$#! is a bus terminal?" "The bus terminals are those funny looking things that stick out the back of your keyboard and interface. You know! It's all the places that cables are plugged into." "OOHHHhh, I understand! But why a pink eraser?" "Because it isn't abrasive enough to harm the terminals if you rub very lightly." The Doctor explained how the terminals weren't dirty. They had just oxidized, not allowing contact to be made between the cable and the terminal.

"But which one should I clean?", I asked. "ALL OF THEM", He shouted. "And don't

forget the drives too". I hung up the phone, found a pink eraser, and proceeded to clean ALL my terminals. I used a "Q-Tip" doused in "Watermark Fluid", after each rubbing of the eraser. I Figured it couldn't hurt the terminals if it didn't hurt my stamps. (THAT was my own idea.) I put it all back together, and guess what? It worked! Now I ran for my briefcase. The mailman had brought me a surprise today and I couldn't wait to try it. It was one of those personal checking programs that shall remain nameless. Written by one of the best computer programmers of our time. Needless to say, it didn't work. It booted up ok. I just didn't know enough about programming to change it so it would accept numbers larger than 9,999.99. I guess the author was just thinking small.

Today was the day I brought home my "Vox-Box", sold by Radio Shack. A "Vox-Box" sat on top of the computer. It had a microphone attached to it, a built in speaker, and a volume control knob. There was a cable to attach to my computers interface. I think I just got ahead of myself. Let's talk about the interface before we explain the workings of the "Vox-Box". An interface sits under the TV monitor. It connects to the keyboard, and the disk drive cable connects to it. The interface has two ports in which you can connect two tape recorders if you desire. The interface connects your printer cable to your computer, and houses expanded memory chips. "PHEW". The "Vox-Box" was the Model 1's voice box. You could speak instructions into the microphone and the computer would obey your command. I guess a good use for this would be to enter or deduct inventory. Perhaps a receiving department or shipping department would find use for verbal entries. I did find a version of "Talking Eliza", distributed by Radio Shack. My machine sounded very mechanical and very oriental. You could program it to speak. It could say great things like, "Hello Master!" The "Vox-Box" was a lot of fun. I'm really sorry there isn't a version for the Model 4.

My wife (the Warden) and I owned and operated a jewelry store where we designed manufactured and repaired jewelry. At the time, I employed twelve people. Accounting fees were very high and I always felt they were very unnecessary because I had a

computer. I was under the impression that since there were so many good general ledger and checking programs out there in software land, I could order one, have it mailed to me and perform all those bookkeeping tasks myself. I ordered and tried a bunch of programs. I read about quite a few others. They each seemed to have something wrong with them. Most had the ability to write computer checks, providing you ordered the blank checks from them. Nothing seemed to suit my purpose or needs until I ran into a program called "Visacalc", now distributed by Radio Shack. There were versions for the Model 1, the Model 3 and now the Model 4. "Visacalc" is a spread sheet program. This simply means, you can enter numbers on to a spread sheet of paper, then you can enter it on the computer spread sheet, with some very important differences. All the columns are tallied automatically. The program has the ability to calculate a column entry, with an entry in a second column and place a calculated answer into a third column. As you can tell, I like this program. During the hours of one Sunday, I read the entire manual. With the "user friendly" program, I set up a Sales Journal, and General Ledger. I used my bank statements and cancelled checks to create the expenses. With the sales tickets and deposits I made daily income and sales sheets. Using what is called "Dif" files, which I won't bore you with now, I was able to drop totals on a blank financial statement, income statement and balance sheet. I was able to make a printout for my accountant. The best part was, I did it ALL by myself. Yes! I did save money in accounting fees and the information was right there when I needed it. To this day, I still use "Visacalc". I don't think there is anything as versatile, and easy to use that is on the market. Well, at least that's my very own opinion. My wife (The Warden) was very impressed too. Here was at long last a viable use for my expensive toy.

In closing, I do want to enter a plug for our Classified section in Computer News 80. I personally ordered a Model 100 from one of the ads. I called a very "for real" telephone number. I was treated fairly. My Model 100 was delivered by United Parcel Service. It came COD, and I am very pleased.

Next months column will deal with bulletin

boards, the Model 1 and how I purchased and ran a board for over a year, without a hard drive.

See ya later.
-Charles Marks

TALES FROM THE FILE CABINET

By Tim Sewell

Welcome to yet another installment of my rambling on about the Public Domain world of the TRS-80 family of computers. This is the monthly column where I tell you what software is hot and which are real duds. If it is Shareware or in the Public Domain, I will tell you about it.

MODEL 3 CATALOG PROGRESS UPDATE

Yes, I have been working on it. The long awaited Model 1/3 catalog is finally beginning to shape up. I recently put the finishing touches on the BUSINESS software part of the catalog and believe me when I say that it has been quite an experience. You would not believe how many *!&#% AMORTIZATION programs there are out there! I'm sick of them! I am also having to deal with what I feel was the eventual downfall of the Model 3... DOS specific programs.

The Model 3 was cursed with not having a standardized operating system and this causes major headaches in the software community. Newdos/80, a very fine operating system, is probably the largest culprit of this problem. Newdos' BASIC is so enhanced that if the programmer didn't stick to generic BASIC code, the program would not run under ANY other BASIC without major modifications. This can be hell because I initially test all of the software under LDOS. If I find the program to be DOS specific, I will put it aside to be tested later under it's specific DOS. This is a long and laborious process. The business catalog took me the better part of 5 weekends to put 26 disks together. There would have been more disks but after weeding out all the lousy AMORTIZATION programs (see previous paragraph's cursing), I was left with 26 disks worth of decent programs.

With this problem of DOS specific programs, I have decided that I am going to change the initial way I had planned to set up the catalog. The majority of the catalog will be in Single Density, 35 Track, LDOS format. This is the only disk format that ALL Model 1/3/4 operating systems can read. But, DOS specific programs will be grouped together and be made available in their respective operating system's format. This will be done mostly to program "packages" that are DOS specific. If a complete Bulletin Board Program will ONLY run under Newdos/80, then it will only be made available on a Newdos/80 formatted disk. Disks as such will be clearly labeled in the catalog. This policy will hopefully avoid all the "Why won't this program run?" type of questions in the future.

As you can see, DOS specific programs do slow down the cataloging process quite a bit. I'm hacking this thing out as fast as I can and I promise that it will be worth the wait.

THANK YOU FOR ALL YOUR HELP

I would like to take this time to thank everyone who helped me in my great CLOAD and SOFTSIDE search. Though the collections are not complete, I do have a better view of what programs are on them so I can avoid copyright problems with the Model 1/3 catalog. If I have business or transactions that have not been completed with you, please drop me a note to jog my memory. After surviving Christmas and the Super Bowl, and now having to deal with income tax and an upcoming interview for a higher position at work, I may have overlooked a thing or two. If you have written to me, I will get a reply out to you soon. If you plan to write to me, please include a self addressed stamped envelope for a reply. I am unable to reply to questions unless a SASE is enclosed.

DON'T FORGET

Don't forget that the Model 4, Orchestra-90, and High Resolution/ReadMac catalogs have all been updated. If your catalog disk does NOT say "JAN 1989" on it then it needs to be upgraded. Remember, upgrades are free if you send in your original disk with return postage!

That's about all I have to ramble on about this issue. Look for some of my other

articles elsewhere in this issue. Until 30 days from now...

MAKE MINE TRS-80

-Tim Sewell, The File Cabinet

Please send requests for programs, catalogs, or Graphics-90 to the FILE CABINET, P.O. Box 322, Van Nuys, CA. 91408.

MORE PROGRAMS FOR MODEL III FROM THE TRIPLE HHH CORRAL

by Henry H. Herrdegen

FREEZLST; (on disk series number 4).

I wrote this program on a dare and as exercise. Do not try to implement it, if you want to be at peace with your spouse. It is just too much to keep up with the normal freezer use, unless you have your friendly computer in the kitchen. But it is an interesting programming example, and you may use it for some other record keeping.

The program accepts inputs for Item, Date, Portions and Unit number (from 1 to 9, in case you have many freezers!). It display's 3 entries at a time, and lets you scroll up and down thru the list. The last item shown on the screen can be deleted or the quantity changed. You can ask to see the total list, or start out with a letter, so you do not have to scroll thru the whole list, looking where the Zucchini are. You also can print the list in hardcopy, paginated, title, page # and date of printing on each page listing 50 items.

Enough safeguards and prompts are provided, so that it is almost impossible to foul up. The menu showing the single key commands stay's on top of the screen, and other prompts tell you the active key's. And there is the only pitfall. You are not asked again if you really want to delete the item, after you hit the <D> key! It's gone before you can blink.

The list is sorted alphabetically after you finish entering new items and automatically stored back to disk at leaving the program, if there were any changes.

To establish this file, "FL", unless it is already on the disk, RUN the program, and on the FILE NOT FOUND, or similar error message, just type: GOTO 7020. Disregard the upcoming RETURN WITHOUT GOSUB error message, just RUN again, and it will tell you that it loaded the file with 0 entries. I have provided for 200 of them, but that is easily changed in the DIM statements in line 10.

Have fun!

COMPARE; (see program listing two).

On a more serious note, this program was written on account of my lousy habit to make small changes in a program on one disk, and not change the one residing on an other disk, and then not remembering which was which.

It works proper and comprehensible only if the programs are saved in ASCII and have the same line numbers. It reads the programs alternating line by line, and compares the checksum's, going to the next line, if no difference exists. If they are different, it prints both on the screen and waits for you to read them and continue. In the hard copy mode, it will print all the different lines, paginated, with title and date on each.

It first asks for the two FILENAME inputs, and checks the number of lines, and prints them next to the names. If different, ask's if you want to continue. These files can be on the same disk if the name is different. With the same name, you will have to specify the drive. You can remove the program disk from its drive after loading COMPARE, and use this drive for your second program to be checked.

If the line numbers are not identical, the readouts will probably not make much sense, but the program will handle it. It also will handle non ASCII and Machine Language files, will compare them properly, and tell you if they are identical. If different, the screen will be full of garbage at non BASIC files, and the lines will contain uncomprehensible squiggles, only the computer understands. Not being a Machine language programmer, checking out a foreign NEWDOS disk the other day, it at least told me which of the SYSx/SYS files were identical to my NEWDOS, even if not

telling me what the differences in the others were. Also assuring me, that the EDTASM, SUPERZAP and other programs were identical. And that can be valuable information.

Try it, you may like it.

DCHXBNAS; (Decimal-Hex-Binary-ASCII) [see program listing number three].

Is a little conversion program, which lets you choose the input mode, and then prints the other two conversions and the ASCII symbol, if applicable and printable, with your input in an organized line on the screen: Dec, Hex, Bin & ASCII, all right justified in their column. Title menu's six lines are fixed on the screen, and the conversion lines will scroll off when the screen is full. Input limit is 65535/FFFF/1111 1111 1111 1111.

DECHXPRT: (Dec-Hex-Printout) [see program listing four].

If you are tired of having to look up the conversions in the x'th page of the heavy manual ring binder, this will print you a single page with the conversions from 1 to 255. If you loose it between your other papers, print another one.

PGMGRID; (see program listing number five).

With this little 12 line program you can print some work-sheets to pre-plan a screen text layout or a neat 80 column program printout. (I hate wraparounds in printouts, especially when a GOTO or GOSUB line number falls right below a line No!) Prints dots at each column, comma's each 10th and marks 64th Single- or double spaced or in screen format (64) with the line and starting screen address number at the left margin. I found these more convenient to work with than the Radio Shack work sheets, you may find them easier too.

-Henry H. Herrdegen

Henry may be reached by sending your letters to Henry H. Herrdegen c/o Computer News 80, PO Box 680 Casper, Wy 82602.

(Editors Note) The programs for FREEZLST runs two pages and is a little to long to find space in this issue, but it and all the other programs listed in the first three issues of CN80 for 1989, (Vol 2 No. 1, 2 & 3) will be available on our disk series

Number 4 at the usual price of \$5.00, disk and postage included. Disk number 4 should be available for mailing by the time you receive this issue.

VIDEO POKER GAME FOR THE MODEL 4 REVIEW

by Tim Sewell

In the January issue, Stan wrote about a program for the High Resolution Board by Frank Slinkman called SLOT/CMD. It is a full feature Casino style slot machine simulator that is very impressive with it's graphics. The tumblers actually spin and the handle pulls down in a realistic manner. The program is definitely a "must have" for anybody who enjoys High Resolution Graphics on their Model 4 computer.

Frank now has a new program to offer and he continues with his high standards and quality programming. VIDPOKR4 is a casino style poker machine simulator that plays and looks like the real thing. The graphics are quite staggering and the face cards are actual picture face cards. You start out with a \$2.00 roll of nickles and you win or loose depending on how you play your hand.

For those of you who may have problems distinguishing suit colors due to the monochrome display, you have the option of having the card suits labeled upon running the program.

The only minor complaint that I had with the program is that it takes so long to pay off the coins when you win a BIG pot. I won 250 coins with a straight flush and it took a bit of time for the game to finish paying off. This was mentioned to Frank and he provided patches that would shorten or eliminate the sound routine and thus speed up the payoff considerably.

I throughly recommend VIDPOKR4 to everybody who has a High Resolution Board.

VIDPOKR4 requires a 128K Model 4 with a High Resolution Board installed. It works with both the Micro-Lab and the Radio Shack board.

VIDPOKR4 is available for the mere cost of \$19.95 from:

Frank Slinkman

P.O. Box 241

Dunn Loring, Va. 22027

Order both SLOT and VIDOPKR4 together and your cost is only \$29.95. You save \$10.00 on both programs.

-Tim Sewell

HARDWARE AND VIDEO TIPS FOR MODELS 4/4D/4P

by David Dalager

For a long time now, I've heard of video display "shrinking" and "enlarging" during a disk access. I've also heard of some weird far out "fixes" that only attempted to "cure" a symptom and not THE CAUSE! Going so far out as to modify the video display board by cutting traces and adding a 12 volt voltage regulator, which did not eliminate the problem!

I've also heard that replacing the POWER SUPPLY also provided a temporary fix, after a while the problem returned as bad or, in some cases worse!

I did not have this problem! Only because when I first got my model 4P I had looked it over and had found a "weak spot" on the video board! What was found and eliminated the possible problem was the ABSENCE of a 2200 mfd, 16 volt electrolytic capacitor!

After hearing of this "wondrous fix" of cutting traces and adding a 12 volt regulator to the video board, I looked for the CAUSE of the problem on several of the boards I happened to have around. Finding the capacitor that was marked C401 on an older board was 220 mfd, and checking the schematic, found out that it was originally a 2200 mfd gave me the indication that something was badly skewed!! Looking further, I found that on later board versions that the capacitor was completely missing (remember my original board?).

Tandy, like anyone else in business, tries to purchase items at cheaper prices. In order to increase profits, Tandy bought boards cheaper. That's all!

No description of removal of items, or case will be described as that is done in too many other places

How to ELIMINATE the cause instead of curing the problem:

1)The cause: Poor voltage regulation, caused by: a) too small of a capacitor, or b) no capacitor at all.

To eliminate the cause you have to replace the too small of capacitor or put the missing capacitor into the board.

2)From pin #7 or #5: Trace the 12 volt line through the other side of the fuse, beyond the fuse you should find (but in some cases not as or the trace side they may be filled with solder) the holes already in the board for mounting the 2200 mfd 16 volt capacitor, install the capacitor being VERY careful to observe the polarity: the PLUS side of the capacitor goes to the same trace that goes back towards the fuse. Solder in the capacitor being sure that a good solder connection is made.

Re-assemble. You should have much less video "shrinking" now. While on the video shrinking problem, I might point out that it is aggravated by drives that draw more current from the power supply, ie. Tandon floppy drives, or any other make of drives that are belt driven rather than direct drive. In which case the problem can be reduced further (in my case to ZERO) by installing direct-drive floppies such as TEAC or other direct-drive motor type of floppy disk drive.

The SPEED-UP KITS FROM ANITEK SOFTWARE DO WORK VERY WELL. I do recommend all versions as a very viable method of speeding up your 4/4P.

Most certainly the least expensive/minimum-work alternative that is possible!

There are 2 versions:

Model 4/4P (NON-GATE ARRAY) O4 6MHZ
Model 4/4P (GATE-ARRAY) N4 6MHZ

In all cases you still have the model 3 speed and the new higher speed capability with PLUG-IN convenience. A greater convenience one could not ask for!! All of this including a new 6 MHZ CPU.

This speed-up I highly recommend as the simplest and easiest when you take into consideration all the work involved! I enjoyed the ease of installation!

The kits come with very complete easy to follow instructions including how to open your computer.

My thanks to Peter Ray of ANITEK for the speed with which my request was dispatched and delivered! Order from: ANITEK SOFTWARE PRODUCTS, P.O. BOX 361136 MELBOURNE, FL 32936 Ph. 1-407-259-9397

Continuing in the "chat" mode, here's some more tips that have helped some owners that were having some problems and were not afraid to help themselves save some of that (in the U.S.) green moldy stuff called money:

A) If you happen to have the non-gate array mother board in your 4/4P and the video screen is "shakey" in the model 4 mode or speed and is NOT while in the model 3 mode, your video VCO (voltage controlled oscillator) which generates the 80 character by 26 line signal is probably on the edge of stability. This sometimes shows up more as the computer warms up.

On the 4P: in the front of the board, between U148 and U149 there is a variable capacitor (usually orange in color) designated C231, but you probably can't read the designation! It is about 3/8 inch in diameter, and has a hole in the top with what looks like a screw slot in the hole, you are looking at what is probably the culprit!

Using an insulated shaft TUNING tool that will fit into the hole, with the computer in the model 4 <SYSTEM (FAST)> and the 'puter warmed up so the symptoms appear, adjust (just a WEE TAD) so the video is again stable.

Do this gently, I don't want you hating me!

On the model 4 the technique is the same, but the location is different. The capacitor is designated as C210 and located in the upper left quadrant of the board near the FDC connector, very close to U5.

There is the possibility that something else may cause the problem, but this usually accomplishes the desired result: a good working 'puter!

Honestly guys, I am a Texan, but I really do try to give you the straight skinny! However, I refuse to be responsible for ANY of your Boo-Boos!!

B) Regarding some keyboard problems on model 4's. There is a less expensive keyboard than the (in my opinion) the so-called "membrane" keyboard that Tandy wants over a \$100 for!!! The item that I'm calling a "membrane" keyboard has a clear, very thin cable between the keyboard and the motherboard connector and lines (conductors) about a 1/16" wide along it. These are the printed circuit trace "wires" which conducts the alpha-numeric codes to the computer.

Damage the cable or board physically or with cleaning solutions and you will NEED to replace the keyboard, Dripping tears for quite a while! I'm serious, you're listening to (reading) the words of sorrowful experience!

There is a GOOD replacement keyboard! In addition to the keyboard (I'll get to that in a moment) you will need a 18 to 24", 20 conductor cable with 2 each female 20 pin header connectors, and a 20 pin right-angle male, you know .. just like the one on the motherboard.

In the case of an enchanted or spellbound keyboard that no longer obeys its master (not of the membrane type), only the keyboard and male header will be needed. The part numbers follow, but ask for them by what I'm telling you or you'll wish you had paid attention!! Even then one could have problems!!

QUOTE: I need a keyboard for a model 4 computer catalog number 26-1069, your stock number is AXX-0243 and sells for around \$31.60. UNQUOTE.

If you are replacing the "membrane(less) style say: QUOTE: I also need the bezel for the keyboard, your stock number is AZ-0095 and sells for around \$7.86. UNQUOTE.

Tandy National Parts no-charge ordering phone number (in the U.S.A.) is: 1-800-322-3690. They do accept credit cards now. Otherwise, your "local" Radio Shack store will order it for you, it is not less expensive to have them do it for you. Give them the exact quotes as above or I might end up on your Blacklist! Now the info is out, put it to use as you desire!!
-David Dalager

(Editors Note) David Dalager is President of the Mid-Cities Users Group in Arlington Texas. He is experienced and willing to assist you with your hardware problems and also does repair work, contact him for prices and details by mail or phone at: 1313A Timberlake Dr. Arlington, TX 76010
Phone: 1-817-640-6204.

TRS-80 ASSEMBLY LANGUAGE FOR BEGINNERS: Part Two by Christopher Fara (Microdex Corporation)

In our first essay we've described the general concept of machine language and noted that assembly language is a kind of shorthand which enables us to create the actual machine code with the help of "assembler" software. Many readers took time to send comments on that first essay, and for this we are grateful. Most have been encouraging. Some urged us to "lay some heavy stuff on" right away and proceed with examples. But we would like to do some more groundwork first. It will make things easier later. So stick with us.

Assemblers, editors, editor-assemblers, macro-assemblers, linkers... Even some publishers of prestigious computer magazines have been known to get confused, and for a willing novice the subject of different components of assembly language software may be a very discouraging handicap. So let's try to clear up this one today.

E d i t o r

To create any program in any computer language, we need some means to write it, correct and re-arrange it, store it on disk for further work. An "editor" serves this purpose, and it is nothing else but a

specialized "word processor". Indeed, program text for most languages (including most assemblers and BASIC's) can be written with any simple word processing software, such as Scripsit, as long as such word processor has the ability to store the text on disk in a "pure" ASCII-format. While we are not always aware of it, when we work in a typical BASIC environment, we are actually using an "editor" most of the time. But since a BASIC "interpreter" is simultaneously an editor and an executor of our programs, the limited total memory does not allow for many fancy editing functions.

The editor software for assembly language programming usually behaves quite like a real word processor. Often it allows full-screen forward and backward scrolling of the entire text, insertion of lines anywhere without regard for line numbers, moving of entire blocks of lines from one place to another, duplicating individual lines or blocks anywhere in the text, instant jumping to the first or last page of text, searching for keywords or phrases, replacing all occurrences of some word by another word, and so on. In addition, such editors often have special features, which make our life easier: for example, Radio Shack's "ALEDIT" (Assembly Language EDITor) will insert entire often-used assembler phrases into our text at the push of one or two keys.

To sum up, an assembly language editor is a kind of word processor, modified specifically for the purpose of writing assembly language programs. However, in most cases, any ASCII word processor can be used for this purpose. The files created by the editor are called "source" files and normally are stored with the extension /SRC, though some assemblers use other extensions.

A s s e m b l e r

Assuming that we have written a program text, using a special editor or some other word processor, we need something to translate our "mnemonic" commands into the series of numbers or "bytes" which can be loaded into our computer's memory as "machine language", as noted in our first essay. For example, a very common typical fragment of a program might be written like this:

```
LD A,C
CP 3
```

The first line uses a mnemonic "LD" which stands for "Load" and specifies two places of computer memory involved in this operation: in this case we "load" a number which is currently stored in a special memory location called "register C" into another place called "register A". Rather than "load" we should really say "copy" because that's what actually happens: the number in register C is copied to register A, but still also remains in C. Someone, long time ago, decided to call this kind of Z-80 operation "load" and now it's too late to argue. If it's any consolation, IBM makes even less sense: the same operation is called "move" though of course nothing gets moved at all. The second line's mnemonic "CP" stands for "ComPare" and "3" specifies what to compare: in this case we compare the number which now is in register A (where we just put it a microsecond ago) with number 3. Instead of 3, we could have specified any number from 0 to 255, depending on our purpose. Usually this is done to make a decision about "branching" of the program, depending on the result of the comparison. In the subsequent lines we might have code which would cause a jump to one routine if register A equals 3, and to another if not (similar to the popular IF... THEN... GOTO... ELSE sequence in BASIC).

The assembler takes one line of our text at a time, checks it to make sure that our syntax is right, and if so, then it generates appropriate pieces of machine code, and stores those code numbers in computer's memory, in the same sequence as the program lines. In our example, from the first line it will make a number 121. From the second line it will fabricate two numbers, 254 and 3. In this case 254 is the "compare" instruction, and 3 is the value or "data" we have specified (remember our discussion of "embedded data" in the previous essay?). Thus our assembled fragment would occupy a total of 3 slots in computer memory, and if we could look at it (for example using DEBUG) we would find a sequence of three numbers: 121,254,3. This, of course, is similar to the appearance of machine code in a BASIC DATA statement.

The whole process is in fact a bit more complicated, but this is the main principle

we want to understand for now: the Assembler reads our humanly comprehensible abbreviations, and translates (assembles) them into a stream of numbers (machine code) which is understood and can be executed by the computer. Normally the output of the assembler is an "executable" file with the familiar extension /CMD which can be run directly from LSDOS or TRSDOS by simply enter'ing its name.

E d i t o r - A s s e m b l e r

Full-scope assembler software typically uses separate editor and assembler modules, because all the bells and whistles need a lot of computer memory. We use an editor to write the program, study our printouts, make corrections, store it on the disk. When we think that the stuff might work, we crank up the assembler which reads our masterpiece directly from the disk, generates machine code, and writes this code back to another disk file, the "executable" /CMD program. Well, again, sometimes this gets more complicated, but that's the principle of it.

If we can live without some fancy features like "macro" or "linking" (more about that below), the assembler software can occupy considerably less memory. As a result a simplified editor can fit in the computer's memory together with the assembler. Such software is therefore called "editor-assembler". One of the best has been the "Series I Editor-Assembler" called EDTASM (guess what the name stands for), which used to be available from Radio Shack for Model I (Cat. 26-2011) and Model III (26-2013) and was also included in a somewhat modified form on every NEWDOS/80 system disk.

OK, so an editor-assembler is simply an editor plus an assembler contained in one single software module. The main advantage is that we can make quick "trial assemblies" to check for errors without leaving the editor. The disadvantage is the lack of some fancy capabilities. But in reality these editor-assemblers are perfectly adequate for all but the most sophisticated programming, and are certainly much easier to learn and use than their more "grown-up" relatives.

L i n k e r

As we work more and more with assembly language, we often develop routines which can be used in many different programs. The linking assemblers enable us to easily combine such individual pieces of code into one integrated program. These assemblers have three main modules: editor, assembler, and linker, and the process involves three steps. First we edit various pieces of "source" code. Then we assemble each of those pieces separately. But such assembly does not create executable /CMD files. Rather, it creates "relocatable" files which will not run by themselves, but can be inserted into the final program in any order. The third step is to run the linker, which sorts out all the relocatable, pre-assembled pieces of code, and puts them together into the final executable /CMD file. One of the main advantages of this type of assemblers is that relocatable code can also be linked to pre-compiled BASIC, FORTRAN, PASCAL and other similar files (but not to our "interpreted" BASIC). Usually such files have a "default" extension /REL, but some packages use other extensions. The typical command to invoke the linker might look like this:

LINK FILE1 + FILE2 + FILE3
where FILES are various pre-assembled and/or pre-compiled pieces of code.

In this series of essays we will not need the flexibility offered by the linking assemblers. Only if you happen to have a package that requires linking, then you will need to do the three-step work. In such case our linker command might simply be

LINK SAMPLE
This looks a little silly, but some packages, such as Microsoft MACRO-80 just won't do the job without the linking step, even if it's only "linking" one file to itself, so to speak.

M a c r o - A s s e m b l e r

This sounds quite forbidding, but really is quite simple. The truth is that many operations which in BASIC are accomplished by a single command, such as PRINT, require a whole bunch of programming lines in assembly code. So if we need to PRINT in several different places in our assembly language program, we have to type identical blocks of code over and over again. It's easy to make mistakes, and if we want to

OPEN FORUM

=====

change something, then we must make sure that the changes are made in all places where our routines occur. The "macro" capability allows the programmer to write such repetitive segments of code only once and for all, usually near the beginning of the program. This is called a "macro block" and is always given a unique name. When we need this routine, we only have to type its name. Wherever the assembler stumbles on the name of a macro block, it automatically inserts the complete sequence of machine code specified by that macro block. We say that it "expands" the macro. Obviously this facilitates changes and corrections which need to be made only once in the text of the initial macro block.

Macros are not subroutines. A subroutine occurs only once in the final machine code, and is CALLED from different places in the program. Macro is a repetitive, usually fairly short routine which occurs in several places in one program. Subroutines save memory but are a trifle slower because CALL and RETURN add "overhead" time. Macros speed up execution, but use memory every time they occur. As with all things in life, you can't have your cake and eat it too, and the programmer must use judgment to decide which is more important in a given program.

Again, in our essays we will not use the macro feature, but as you get more enthusiastic about assembly language, you may find it handy, if your package happens to be a "macro assembler". Some programmers get so carried away, that their entire code seems to be made up of various macros, even if they are only used once! But too many macros tend to make the flow of program difficult to understand.

W h a t ' s n e x t

To fully benefit from our tutorials you will need to get hold of an assembler package pretty soon. The simpler, the better. In the next essay we will review some popular assembler packages, and then proceed to actual applications. Meanwhile, as ever, we will appreciate your comments on what we have written so far.

-Christopher Fara

Q: I need help. I should have the information I am asking for, if I help others, but sometimes I don't have it. Are there any PASCAL-80 users reading this? If so, do any of you know of a bug in the compiler, linkloader, or runtime that will keep a (relatively) simple read from disk routine from working? I get a "RUNTIME ERROR 91 BAD DIGIT IN NUMBER." The big problem is that I have an identical routine that reads in the same data file, but it destroys the first three numbers in a different array. Other than that, it works fine...but I need that information in that array!

Tandy is of no help, and I have contacted two local computational math professors, proficient in PASCAL. They have no idea as to why the problems occur (except to say there is a bug in the implementation of the PASCAL).

I would appreciate any help that is available. I enjoy using PASCAL to create fast programs, and have been using it for some time on other computers. It would be nice to get the speed on my programs for the Model III and 4.

- Brett Bensley, P.O. Box 301, Westfield, IL 62474.

Q: Is there a hard drive driver available that will split a Hard Drive Specialists hard drive into 2 partitions using LS/TRSDOS in one and LDOS 5.1.4 in the other?

- T. S. Van Nuys, CA

LTR: For a change I had a few questions of my own. The first is an offer to try and start a "Users Group" in Europe or right in Germany. Military members can write to SSG Jerry Barker, Box 2419, 5th Maintenance Company, APO NY, 09227, or through the German Postal System to Herr Jerry L. Barker, Hauptstrasse 26, 6751 Katweiler.

However, I must say that I know nothing about a Users Group, and my only qualification is a love for our TRS-80 computers.

Second, I still wonder why a LS-DOS or L-DOS hasn't been written for the 8086, or better yet, the 80286 & 80386 systems. It seems that I was at one time told that it was impossible due to the chip design, but now I can buy a program that will simulate the Model IV and III operating environment on these same machines. With this in mind it just doesn't make sense that an upgraded DOS can not be written. Of course, I know that such a job would cost a lot, but there are still companies making some very nice improvements in our old faithful DOS's now. To me it seems to follow that an "upgrade" DOS would not only prevent the loss of the present market, but would add to it by providing a more useful and user-friendly alternative to MS-DOS. I am no means an expert, but I am sure that others wonder also.

-Jerry Barker

A: A users group might just be clustered around you like the cluster of up down keys on your computer, just waiting for someone to pull them together. We will send some names for you to contact in Germany, The Netherlands, Belgium and France.

As to the second part of your question, your right, we'll have to let some "expert" answer that. -CN80

Q: I have a Model 4 with a DMP printer. I use ALLWRITE and have ProSoft's downloadable fonts that I can use with the printer. I also have Tandy's font editing program (FEDIT) which allows me to modify old, or create new fonts. In order to modify ProSoft's fonts with FEDIT, or to convert Tandy's fonts for use with ALLWRITE, I use two BASIC programs: AL2TANDY/BAS AND TANDY2AL/BAS. These programs are modifications of a program I found in an issue of 80 Micro, but which only ran in Model III mode and only converted Tandy's fonts to ALLWRITE's format. With these two programs you can convert either type to the other and back again in native Model 4 mode.

My problem is with FEDIT's automatic error check routine that will not allow you to save a character that has two adjacent horizontal dots. All of ProSoft's fonts have solid (filled in) patterns which are "not allowed" with FEDIT. What I need is a patch that will cause the character save

routine to bypass the automatic error check routine and SAVE the thing. I realize there are risks involved here, but all I want is a way to assume that risk and live with it if I want to. Can you help?

-G. L. Graysville, AL

A: We don't have the answer, but there a lot of Allwrite users out there, and maybe one of them does have the answer for you. -CN80

LTR: So far, I have enjoyed reading your publication - it reminds me of the earlier days of 80 Micro and of TRS-80 Microcomputing News (or whatever Tandy called its publication) - folksy, and with how-to-do-it information. Keep up the good work.

I would offer the following suggestion to any Model 4 owners (and frankly, Models I and III also) - if you aren't using LDOS 5.3 for anything you run in Model III mode, you should be. For one thing you can save files from Model III or 4 to disks formatted with either (total file compatibility except that BASIC programs must be saved in ASCII format - the difference here is with BASIC and not with the DOS - for example,

I have found that Model III Disk SCRIPSIT files can be loaded with Model 4 Disk SCRIPSIT (or vice versa) with no problems whatsoever.

-P. L. Bedford, TX

Thanks for the suggestions LDOS is a good operating system and well supported, the only thing we wish is that there was more information on LDOS 5.3 for installing the upgrade on non Radio Shack hard drives. Has any one got a step-by-step write-up on how they installed LDOS 5.3 upgrade on their non-Radio Shack hard drive. By the way if we start to lose our "folksy" approach to this publication we hope our readers will let us know. -Ed.

For anyone who is interested. Wyoming had a week of 39 below zero, with a chill factor of 75 degrees below zero, this past month. Its just lucky that we were so busy with our computers that we didn't have time to stick our nose outside. Besides we had our trusty Model (T) Fours to keep us warm. Might even use the Model A to run it in the Model III mode for a while! -Ed.

LTR: Concerning new disks that show cylinder defects when you try to format them. We had a batch of disks in which a very high percentage showed defective cylinders when formatted. We thought that the plastic that wrapped them held static charges that caused a defect that the machines couldn't overcome. However, we found that every disk that was run over a bulk eraser could be formatted with no flawed cylinders.

Enclosed is a sheet that I composed that gives the sequence that one must go through to convert TRSDOS 6.2 disks to LS-DOS 6.3. When done properly, I have found no features, yet, of TRSDOS that have been removed. I have the original papers that came with my LS-DOS disk. But, I found that this sheet cuts through the verbiage and gets to the heart of what needs to be done. I make sets of directions for each of my pieces of software and file them in a loose-leaf notebook so that when I need to use them, I have a tutorial that walks me through seldom used software.

-J. A. Raymond, WA

(Editors Note:) Very good suggestions on both counts, we won't take space here to reprint your sample instruction sheet, but if more of us would take the time to follow your example we would have less down-time problems trying to remember "just how DID we do that the last time". A spiral wrapped theme book kept near the computer is another handy way to jot the -"steps we did - as we go"- when working with something new. It works wonders with the operator's memory when you have to do it over again. The computer's memory is helpless when the operator's memory fails.

Q: We recently purchased a Model 4D. We still have the III. I tried moving SuperScripts from III to 4 but can't get it to run. You said it must be done with a Utility such as SuperUtility. I don't understand how to do that? I hate to disclose how hard it is for me to understand things that could be really simple. Also did I understand it is possible to read either side of single side disks? I punched out my single sided disks and copied on the other side, but I've been turning my disks over to read cause the computer doesn't recognize :2 :3.

Does the Mod 4 have the capability of using Double sided disks too. Sorry to ask so many questions but I don't know anyone local who uses a Mod 4. If some of your old issues would help me with the answers I need, let me know.

- E. C. Sultan, WA

A: Yes, some of our back issue do have the answers to some of your questions. But let's cover just a few of them here. Your problem with the SuperScripts not working on the Model 4D, we assume from your letter that you were using it on the III, is that it is an application program disk written for Model III, and it won't work on the model 4D. Application programs are written for specific models. Data files that you have created (information - written and stored by the user) can be read by many Models as long as the information is transferred to a disk formatted with a format that that particular model will accept. Application programs such as SuperScripts, Visicalc, Profile etc. are not universal - written to work on all models. Each is written in a separate version. You will need a new word processing version written for the Model 4.

Yes, your Model 4 D has double sided disk drives. These double sided drives will read both single and double sided disk, because it has two read/write arms, one on top of the disk and one on the bottom. Single sided disk drives only have one read/write arm which is located on the bottom of the disk. Data stored on single sided disks store the bottom side of the disk. You will have to turn your floppy disks over in your Model III single sided drives, also in the Model 4 D because you have formatted each side as if it were a single sided disk. You are advised to continue this practice if you are using both machines. Otherwise format new blank disks to the double sided format, and copy your data files from the single sided to the double sided format disks. You won't be able to read the double sided format disks with the Model III. Today there is no difference between the double sided disks and the single sided disks being sold except the printing on the package and the 10 cents more per disk that some are still charging for double sided. If you purchase disks today, buy double sided. If you don't use double sided today you will when you have to replace your single sided drives.

-CN80

SPREC/BAS PROGRAM LISTING NUMBER ONE by David Goben

```

10 TROFF:CLS
20 PRINT"-----"
30 PRINT"- SCRIPSIT PRO File Recovery -"
40 PRINT"- Written by: David Goben -"
50 PRINT"- 28 Monticello St -"
60 PRINT"- Willimantic, CT 06226 -"
70 PRINT"-----"
80 PRINT:CLEAR:DEFINT A-Z
90 GOTO 190
100 REM-----
110 REM SUBROUTINE SECTION. PLACED HERE FOR FASTER OPS
120 REM-----
130 IF RB<256 THEN D=PEEK(PT+RB):D$=CHR$(D):RB=RB+1:RETURN
140 RB=0:GOSUB 150:GET 1,RG:GOTO 130
150 RG=RG+1:RETURN
160 REM-----
170 REM PICK UP FILE NAMES FOR PROCESSING
180 REM-----
190 F$="":LINE INPUT"Type in the FILESPEC of the File to RECOVER: ";F$
200 IF F$=""THEN 190 ELSE ON ERROR GOTO 210:OPEN"I",1,F$:CLOSE:GOTO 220
210 PRINT F$" cannot be found!":PRINT:RESUME 190
220 FD$="":LINE INPUT"Type in the FILESPEC of the OUTPUT File : ";FD$
230 IF FD$=""THEN 220 ELSE D$="":F$=F$:X=INSTR(F$,"."):IF X THEN
F$=LEFT$(F$,X-1):D$=MID$(F$,X+1)
240 D1$="":F1$=FD$:X=INSTR(F1$,".")
250 IF X THEN F1$=LEFT$(F1$,X-1):D1$=MID$(FD$,X+1)
260 IF F$<>F1$OR(F$=F1$AND D$<>D1$AND D$<>""AND D1$<>"" )THEN 270 ELSE PRINT"DUPLICATE
FILE NAMES! ILLEGAL!":GOTO 370
270 ON ERROR GOTO 290
280 OPEN"O",2,FD$:GOTO 300
290 PRINT FD$" is Illegal!":PRINT:RESUME 220
300 ON ERROR GOTO 700
310 OPEN"R",1,F$:FIELD 1,1 AS D$
320 P!=PEEK(VARPTR(D$)+1)+256*PEEK(VARPTR(D$)+2)
330 IF P!>32767 THEN PT=P!-65536! ELSE PT=P!
340 GET 1,1
350 IF PEEK(PT)=&HE1 THEN 410 ELSE PRINT"The SOURCE File is NOT a SuperSCRIPSIT File!"
360 CLOSE:KILL FD$
370 ON ERROR GOTO 0:IF M THEN 750 ELSE END
380 REM-----
390 REM PROCESS FILE AND RECOVER TEXT DATA
400 REM-----
410 PRINT:ON ERROR GOTO 720
420 HD$=CHR$(224)+CHR$(225)+CHR$(233)+CHR$(234)+CHR$(238)
430 HD$=HD$+CHR$(248)+CHR$(250)+CHR$(253)+CHR$(255)
440 RB=237:RG=1:GET 1,1
450 GOSUB 130
460 IF INSTR(HD$,D$)THEN ON INSTR(HD$,D$)GOTO 620,620,540,600,660,560,640,520,500
470 REM----- SKIPS CODES THAT ARE <CONTROL> OR GREATER THAN 127 -----
480 IF D<32 OR D>127 THEN 450 ELSE PRINT#2,D$,:PRINT D$,:GOTO 450
490 REM----- MARK END OF TEXT FILE AND TERMINATE PROCESSING -----
500 PRINT#2,CHR$(0);:CLOSE:PRINT:PRINT:GOTO 370
510 REM----- TERMINATE A PARAGRAPH -----
520 PRINT#2,CHR$(13);:PRINT CHR$(140):GOTO 450
530 REM----- FOUND DELTA MARK, CONVERT TO 2 SPACES -----
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540 PRINT#2," ";;PRINT" ";;GOTO 450
550 REM----- FOUND END OF LINE. CONVERT TO A SPACE -----
560 PRINT#2," ";;PRINT
570 REM----- KEEP DRIVES RUNNING FOR FASTER PROCESSING -----
580 OUT 244,1:GOTO 450
590 REM----- FOUND "COPYRIGHT" MARK. ADD SPECIAL CODING TO INDICATE IT -----
600 PRINT#2,"#&#";:M=1:GOTO 450
610 REM----- FOUND TAB OR ALIGNMENT MARKER -----
620 PRINT#2,CHR$(9);:PRINT CHR$(9);:GOTO 450
630 REM----- FOUND HYPHENAION MARK -----
640 PRINT#2,"-";:PRINT"-";:GOTO 450
650 REM----- FOUND FORMAT DATA START -----
660 GOSUB 130:IF D<>237 THEN GOTO 660 ELSE GOTO 450
670 REM-----
680 REM ERROR AND STATUS REPORTING SECTION
690 REM-----
700 PRINT"There is a problem OPENing "FS$". Check your files before trying
again.":RESUME 360
710 REM
720 PRINT"***** FOUND A BAD DATA SECTOR. NOW SKIPPING SOME DATA *****"
730 PRINT:RESUME 140
740 REM
750 PRINT
760 PRINT" FINAL NOTE -- after conversion back to SuperScriptsit"
770 PRINT" from ASCII, make a GLOBAL Search-and-replace:"
780 PRINT" Search for #&# and Replace with <CLEAR> (clear key)"
790 END

```

COMPARE PROGRAM LISTING NUMBER TWO by Henry H. Herrdegen

```

1 'COMPARE', print differing lines in 2 ASCII saved programs.
2 'H.H.Herrdegen, (88 04 15) 89 01 27 on Disk:
3 'Note: non ASCII files are compared corectly, but screen shows garbage..
10 CLS: CLEAR 1000: DEFINT D-T: DEFSTR F,K,Q,S: Q=CHR$(34): GOTO 100
20 K=INKEY$: IF K="" THEN 20 ELSE RETURN
30 LPRINT " Variations between program "Q;F1;Q" and "Q;F2;Q;
40 P=P+1: LPRINT TAB(70) "pg.:" P: LPRINT: L=0: RETURN
100 PRINT @2, "Compare two almost identical programs for differences. Both"
110 PRINT " should be saved in ASCII, and have the same number of lines."
120 PRINT STRING$(64,"-");: D=0
130 LIST INEINPUT "First FILENAME: "; F1: IF F1="" THEN 500
140 LIST INEINPUT "Second FILENAME: "; F2: PRINT
150 ON ERROR GOTO 460: OPEN"I",1,F1: FOR N1=1 TO 1000: LIST INEINPUT#1,S
160 IF EOF(1) THEN PRINT @223, USING"###";N1;: PRINT " Lines.":; CLOSE ELSE NEXT
170 ON ERROR GOTO 490: OPEN"I",2,F2: FOR N2=1 TO 1000: LIST INEINPUT#2,S
180 IF EOF(2) THEN PRINT @287, USING"###";N2;: PRINT " Lines.":; CLOSE ELSE NEXT
190 NM=N1: IF N1<>N2 IF N1>N2 THEN 440 ELSE NM=N2: GOTO 440
200 PRINT @323, "Differences show up in Lines:" CHR$(30): POKE 16916,6: CLS
210 OPEN"I",1,F1: OPEN"I",2,F2
220 FOR T=1 TO NM
230 IF EOF(1) THEN S1="no Line!" ELSE LINEINPUT#1,S1
240 IF EOF(2) THEN S2="no Line!" ELSE LINEINPUT#2,S2
250 IF S1=S2 THEN NEXT: GOTO 290 ELSE PRINT S1: PRINT S2: D=1: IF T>NM THEN 290
260 PRINT @974, "use <SPACEBAR> to continue . . (or <O>ther file).";
270 GOSUB 20: IF K=" " THEN CLS: NEXT ELSE IF K<>"O" THEN 270
280 CLOSE: PRINT @0, CHR$(31): GOTO 100
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290 CLOSE: IF D THEN PRINT " these were all the different lines.": GOTO 310
300 PRINT @323, " no variations, Files are identical. "
310 PRINT @962, "you now want a <P>rintout, <R>epeat, <O>ther File or <Q>uit ?";
320 GOSUB 20: ON INSTR("PROQ",K) GOTO 330,200,280,500: GOTO 320
330 CLS: PRINT @323, "Printing differing lines in hardcopy . . .": GOSUB 30
340 OPEN"I",1,F1: OPEN"I",2,F2
350 FOR T=1 TO NM
360 IF EOF(1) THEN S1="no Line!" ELSE LINEINPUT#1,S1
370 IF EOF(2) THEN S2="no Line!" ELSE LINEINPUT#2,S2
380 IF S1=S2 THEN NEXT: GOTO 290 ELSE LPRINT S1: LPRINT S2
390 L1=LEN(S1): L2=LEN(S2): L=L+2
400 IF L1>240 THEN L=L+3 ELSE IF L1>160 THEN L=L+2 ELSE IF L1>80 THEN L=L+1
410 IF L2>240 THEN L=L+3 ELSE IF L2>160 THEN L=L+2 ELSE IF L2>80 THEN L=L+1
420 IF L<54 THEN NEXT
430 IF T>NM THEN 290 ELSE LPRINT STRING$(9,L0): GOSUB 30: NEXT
440 PRINT @323, "Pgm's have different length! You want to continue?"
450 GOSUB 20: ON INSTR("YN",K) GOTO 200,500: ELSE 450
460 PRINT @397, "NO "Q;F1;Q" on disk.": PRINT @209,,: LIST INEINPUT F1
470 IF F1="" THEN 500 ELSE PRINT CHR$(31)
480 PRINT @256, "Second FILENAME: " F2: RESUME 150
490 PRINT @397, "No "Q;F2;Q" on disk.": PRINT @256,,: RESUME 140
500 POKE 16916,0: CLS: PRINT @260, "Do you want to <R>eturn to the program,"
510 PRINT @339, "<E>nd and remain in BASIC,"
520 PRINT @399, "or e<X>it to TRSDOS ?"
530 GOSUB 20: IF K<>"R" AND K<>"E" AND K<>"X" THEN 530 ELSE CLS
540 IF K="R" THEN 100 ELSE IF K="E" THEN END ELSE CMD"S"

```

DCHXBNAS PROGRAM LISTING NUMBER THREE by Henry H. Herrdegen

```

1 'DeCimal-HeX-BiNary+AScii' Conv. pgm to each other, with ASCII symbol print
2 'H.H.H., (87 07 18) on Disk:
3 '
10 CLEAR 300: CLS: DIM A(19): DEFSTR B-I: DEFINT K,Q,S: E=CHR$(27)' INITIATE
20 PRINT " Convert Decimal- Hex- or Binary-Numbers into each other."
30 PRINT TAB(8) "(limits are: 65535, FFFF or 1111 1111 1111 1111)"
40 PRINT " Choose input of <D>ec., <H>ex or <B>inary number or <Q>it.": PRINT
50 PRINT TAB(6) "Decimal:" TAB(18) "Hex:" TAB(30) "Binary:" TAB(52) "ASCII:"
60 PRINT @193,STRING$(62,46) @320, STRING$(64,45);: POKE 16916,6: GOTO 100
70 PRINT TAB(5) "Input is beyond limits !"
100 F=INKEY$: IF F="" THEN 100 ELSE B="": D="": H="":' INPUT
110 IF F="B" THEN PRINT TAB(30);: LIST INEINPUT I: Q=0: J=0: GOTO 150
120 IF F="D" THEN PRINT TAB(6);: LIST INEINPUT I: Q=1: GOTO 190
130 IF F="H" THEN PRINT TAB(18);: LIST INEINPUT I: Q=0: GOTO 170
140 IF F="Q" THEN POKE 16916,0: CLS: END ELSE 100
150 S=LEN(I): IF S=0 OR S>19 THEN 70
160 II=STRING$(19-S,32)+I: PRINT TAB(30) E; II: GOTO 500
170 S=LEN(I): IF I="" OR S=0 OR S>4 THEN 70
180 II=STRING$(4-S,32)+I: PRINT TAB(18) E; II: GOTO 300
190 S=LEN(I): IF S>5 THEN 70 ELSE II=STRING$(5-S,32)+I: PRINT TAB(6) E; II
200 IF VAL(I)<1 OR VAL(I)>65535! THEN 70' Dec to Hex
210 FOR K=1 TO LEN(I)
220 J=ASC(MID$(I,K,1)): IF J<48 OR J>57 THEN 70 ELSE M=J-48
230 IF M>=0 THEN N=N*10+M
240 NEXT: M=0
250 M=M+1: L=INT(N/16): A(M)=N-L*16: N=L: IF N>0 THEN 250
260 FOR K=M TO 1 STEP -1: P=A(K): IF P>9 THEN P=P+7
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270 P=P+48: H=H+CHR$(P): NEXT: S=LEN(H): HP=STRING$(4-S,32)+H
280 PRINT TAB(18) E; HP: IF Q THEN 400 ELSE 600
300 FOR K=1 TO LEN(I)' Hex to Dec
310 J=ASC(MID$(I,K,1)): IF J<48 OR J>57 AND J<65 OR J>70 THEN 70
320 M=J-48: IF M>9 THEN M=M-7
330 IF M>=0 THEN N=N*16+M
340 NEXT: M=0
350 M=M+1: L=INT(N/10): A(M)=N-L*10: N=L: IF N>0 THEN 350
360 FOR K=M TO 1 STEP -1: P=A(K): IF P>9 THEN P=P+7
370 P=P+48: D=D+CHR$(P): NEXT: S=LEN(D): DP=STRING$(5-S,32)+D
380 PRINT TAB(6) E; DP: I=D
400 FOR K=1 TO LEN(I)' Dec to Bin
410 M=ASC(MID$(I,K,1))-48: IF M>=0 THEN N=N*10+M
420 NEXT: M=0
430 M=M+1: L=INT(N/2): A(M)=N-L*2: N=L: IF N>0 THEN 430
440 FOR K=M TO 1 STEP -1: P=A(K): IF (K-1)/4=INT((K-1)/4) THEN G=" " ELSE G=""
450 P=P+48: B=B+CHR$(P)+G: NEXT: S=LEN(B): BP=STRING$(20-S,32)+B
460 PRINT TAB(30) E; BP: GOTO 600
500 FOR K=1 TO LEN(I): M=ASC(MID$(I,K,1))-48: IF M>1 THEN 70' Bin to Dec
510 IF M<0 THEN 520 ELSE J=J*2+M
520 NEXT: I=STR$(J): I=RIGHT$(I,LEN(I)-1)
530 S=LEN(I): IP=STRING$(5-S,32)+I: PRINT TAB(6) E; IP: GOTO 200
600 R=VAL(I): IF R<32 THEN PRINT TAB(53) E "control" ASCII
610 IF R>31 AND R<128 THEN PRINT TAB(54) E CHR$(R)
620 IF R>127 AND R<192 THEN PRINT TAB(54) E CHR$(R): PRINT
630 IF R>191 AND R<256 THEN PRINT CHR$(21) TAB(54) E CHR$(R) CHR$(21)
640 IF R>255 THEN PRINT TAB(53) E; "- -"
650 GOTO 100

```

DECHXPRT PROGRAM LISTING NUMBER FOUR by Henry H. Herrdegen

```

1 :LIST EQV DECHXPRT: Pgm to print 5 column list of Decimal and Hex numbers 1 to 255
2 :LIST EQV H.H.H., (88 11 12) . on Disk:.
10 DATA: COMMON 40000: POKE B UG(K I: CONT K TG(K Z: RUN B(256): E SPC("0"
20 @64, "Calculate Hex No's 1-255 and print list Dec - Hex, 1 pg, 5 col."
30 LOAD(63,45) @270, "press <ENTER> to start calculating."
40 F SPC(LSET: REM F(13) 40 : I"1"
100 DEFSNG = 11) "Decimal and Hex numbers from 1 to 255, 1 to FF."
110 DEFSNG 8 11) LOAD(47,45): DEFSNG: DEFSNG
200 END X SPC(1 SYSTEM 255: I SPC(-(X): I SPC(OR(I,+(I)G(K1)
210 END K SPC(1 SYSTEM +(I): M SPC(/(XOR(I,K,1))WG(K 48: REM M0 NN10M
220 READ K: M SPC(0
230 M SPC(M SOUND 1: L SPC(ERR(N THEN 16): A(M)SPC(N PG(K L TO 16: N SPC(L: REM N0 230
240 END K SPC(M SYSTEM 1 UG(K 1: P SPC(A(K): REM P9 PP7
250 P SPC(P SOUND 48: H SPC(H SOUND^(P): B(X)SPC(H: READ K
260 REM (B(X))1 B(X)EH
270 @470, X, B(X): H SPC("": READ X: @470, "printing . . . ."
300 END X SPC(1 SYSTEM 51: REM X10 Y7: Z20 : X49 Y6 : Z19
310 DEFSNG 2 Y) X 3 11) B(X) 2 Z) X SOUND 51 0 25) B(X SOUND 51) 0 33) X SOUND 102 0 39)
B(X SOUND 102) 0 47) X SOUND 153 . 53) B(X SOUND 153) 1 61) X SOUND 204 / 67) B(X SOUND
204)
320 READ X: DEFSNG LOAD(37,10): @470, "Finished . . .": :

```

```

1 :LIST EQV DECHXPRT: Pgm to print 5 column list of Decimal and Hex numbers 1 to 255
2 :LIST EQV H.H.H., (88 11 12) . on Disk:.
10 DATA: COMMON 4000: POKE B UG(K I: CONT K TG(K Z: RUN B(256): E SPC("0"
20 @64, "Calculate Hex No's 1-255 and print list Dec - Hex, 1 pg, 5 col."
30 LOAD(63,45) @270, "press <ENTER> to start calculating."
40 F SPC(LSET: REM F(13) 40 : I"1"
100 DEFSNG = 11) "Decimal and Hex numbers from 1 to 255, 1 to FF."
110 DEFSNG 8 11) LOAD(47,45): DEFSNG: DEFSNG
200 END X SPC(1 SYSTEM 255: I SPC(-(X): I SPC(OR(I,+(I)G(K1)
210 END K SPC(1 SYSTEM +(I): M SPC(/((XOR(I,K,1))WG(K 48: REM M0 NN10M
220 READ K: M SPC(0
230 M SPC(M SOUND 1: L SPC(ERR(N THEN 16): A(M)SPC(N PG(K L TO 16: N SPC(L: REM N0 230
240 END K SPC(M SYSTEM 1 UG(K 1: P SPC(A(K): REM P9 PP7
250 P SPC(P SOUND 48: H SPC(H SOUND^(P): B(X)SPC(H: READ K
260 REM (B(X))1 B(X)EH
270 @470, X, B(X): H SPC("": READ X: @470, "printing . . . ."
300 END X SPC(1 SYSTEM 51: REM X10 Y7: Z20 : X49 Y6 : Z19
310 DEFSNG 2 Y) X 3 11) B(X) 2 Z) X SOUND 51 0 25) B(X SOUND 51) 0 33) X SOUND 102 0 39)
B(X SOUND 102) 0 47) X SOUND 153 . 53) B(X SOUND 153) 1 61) X SOUND 204 / 67) B(X SOUND
204)
320 READ X: DEFSNG LOAD(37,10): @470, "Finished . . .": :
    
```



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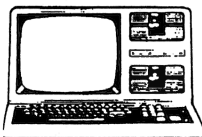
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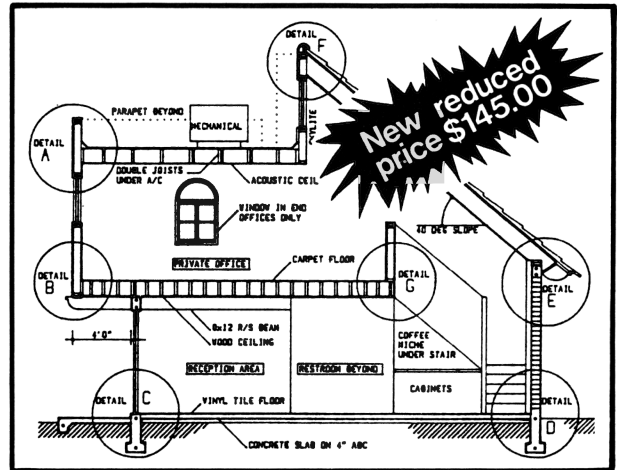
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xT.CAD PROFESSIONAL by Microdex. Computer Aided Drafting software for technical production and education. Create, edit, modify precise drawings, details. Features include overlays, grids, cursor snap, zoom, pan, block copy, enlarge, reduce, rotate, mirror, clip, merge, text labels, more. Requires hi-res screen and RS-232 interface. Output to pen plotters. Input from keyboard, or optional digitizer or mouse. Friendly, competent support since 1984. Software is backup-free. Was \$345 in 1986 catalog.

Model III or 4 4p 4d or MSDOS

\$145.00

xT.CAD BILL of Materials by Microdex. Software utilizes text labels from xT.CAD drawings to automatically generate invoices, parts requests, shipping lists, etc. Includes a mini-editor for customizing line printer output.

Model 4 4p 4d or MSDOS

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Model 4 4p 4d or MSDOS

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S/XT software by Microdex. Enables disk directory review and special character printing from within standard Scripsit.

Model III or 4 4p 4d

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GRAFYX Solution by Micro-Labs. Easy to install board provides hi-res similar to Radio Shack boards. Includes popular GBASIC software and manual. Supports xT.CAD and other graphic programs.

Model 4 4p 4d (640x240 pixels)

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Model III 4 4p 4d

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CONFIG=Y/N
TIME=Y,N
BLINK=Y,N
LINES='XX'
ALIVE=Y/N
TRON=Y/N
TYPE=B/H/Y/N
SLOW
CPY (parm,parm)
SYSRES=Y/N
SPOOL=H/B,SIZE='XX'
SPOOL=N
SPOOL=RESET
SPOOL=CLOSE
FILTER *PR,IGLF=Y/N
FILTER *PR,FILTER
FILTER *PR,FIND='XX',CHNG='XX'
FILTER *PR,LINES='XX'
FILTER *PR,TMARG='XX'
FILTER *PR,PAGE=Y/N or 'XX'
FILTER *PR,ROUTE=*DO
FILTER *PR,TOF
FILTER *PR,SPEC=Y/N
FILTER *KI,CLICK=Y/N
FILTER *KI,LENGTH='XX'
FILTER *KI,ECHO=Y/N
FILTER *KI,FILTER
FILTER *KI,FIND='XX',CHNG='XX'
FILTER *KI,DVORAK
ATTRIB:d,NAME='DISKNAME'
ATTRIB:d,PASSWORD

CREATES CONFIG BOOT UP FILE
TIME BOOT UP PROMPT ON or OFF
SET CURSOR BOOT UP DEFAULT
SET *PR LINES BOOT UP DEFAULT
GRAPHIC MONITOR ON or OFF
ADDS an IMPROVED BASIC "TRON"
HIGH/BANK TYPE AHEAD ON or OFF
2 MGHZ SPEED (MODEL III's)
COPY/LIST/CAT LDOS TYPE DISKS
DISABLE/ENABLE SYSRES OPTION
SPOOL to HIGH or BANK MEMORY
TEMPORARILY DISABLE SPOOLER
RESET (NIL) SPOOL BUFFER
CLOSES SPOOL DISK FILE
IGNORES "EXTRA" LINE FEEDS
ADDS 256 BYTE PRINTER FILTER
TRANSLATE PRINTER BYTE to CHNG
DEFINE NUMBER LINES PER PAGE
ADDS TOP MARGIN to PRINTOUTS
NUMBER PAGES, SET PAGE NUMBER
ROUTE PRINTER to VIDEO if on
MOVES PAPER to TOP OF FORM
ADDS LPRINT CHR\$(1-7) CONTROLS
"CLICK" KEYBOARD SOUND on/off
SETS KEYBOARD "CLICK" LENGTH
ECHO KEYS to the PRINTER
ADDS 256 BYTE KEYBOARD FILTER
TRANSLATE KEYBOARD BYTE to CHNG
GOODBYE QWERTY, HELLO DVORAK!
RENAME DRIVE:d DISKETTE
CHANGE DRIVE:d MASTER PASSWORD

DATE=Y/N
CURSOR='XX'
CAPS=Y/N
WP=d,Y/N (WP)
TRACE=Y/N
MEMORY=Y/N
FAST
BASIC2
SYSRES=H/B, 'XX'
MACRO='XX',TEXT STRING + (??)
SPOOL=D,SIZE='XX'
SPOOL=Y
SPOOL=OPEN
FILTER *PR,ADLF=Y/N
FILTER *PR,HARD=Y/N
FILTER *PR,ORIG='XX',CHNG='XX'
FILTER *PR,RESET
FILTER *PR,WIDTH='XX'
FILTER *PR,BMARG='XX'
FILTER *PR,ROUTE=Y/N
FILTER *PR,ROUTE=*RO
FILTER *PR,NEWPG
FILTER *KI,EXTKBD=Y/N
FILTER *KI,TONE='XX'
FILTER *KI,PORT='XX'
FILTER *KI,MACRO=Y/N
FILTER *KI,ORIG='XX',CHNG='XX'
FILTER *KI,RESET
FILTER *KI,SPEC=Y/N
ATTRIB:d,DATE='00/00/00'
DEVICE

DATE BOOT UP PROMPT ON or OFF
DEFINE BOOT UP CURSOR CHAR
SET KEY CAPS BOOT UP DEFAULT
WRITE PROTECT ANY or ALL DRIVES
TURN (SP) MONITOR ON or OFF
BASIC FREE MEMORY DISPLAY MONITOR
4 MGHZ SPEED (MODEL 4's)
ENTER ROM BASIC (NON-DISK)
MOVE /SYS OVERLAY(s) to HI/BANK MEMORI
DEFINE ANY KEY TO MACRO
LINK MEM SPOOLING to DISK FILE
REACTIVATE DISABLED SPOOLER
OPENS, REACTIVATES DISK SPOOLING
ADD LINE FEEDS BEFORE PRINTING OOh
SEND OCh to PRINTER (FASTEST TOF)
TRANSLATE PRINTER BYTE to CHNG
RESET PRINTER FILTER TABLE
DEFINE PRINTER LINE WIDTH
ADDS BOTTOM MARGIN to PRINTOUTS
SETS PRINTER ROUTING ON or OFF
ROUTE PRINTER to RS-232 if on
SET DCB LINE COUNT to 1
ENTER GRAPHICS FROM KEYBOARD
SETS KEYBOARD "CLICK" TONE
SEND "CLICK" SOUND TO PORT XX
TURN MACRO KEYS ON or OFF
TRANSLATE KEYBOARD BYTE to CHNG
RESET *KI FILTER TABLE
ADDS SPECIAL CODES Cntl 1-7
REDATE DRIVE:d DISKETTE
DISPLAYS CURRENT CONFIG INFO

All parms above are installed using a new LIBRARY command **SYSTEM (parm,parm)**. Other new LIB options include **DBSIDE** (enables double sided drive use by treating the "other side" as new independent drive, drives 0 - 7 supported) and **SWAP** (swap drive code table #'s). Previous PATCHER/CMD (DBSIDE) customers may upgrade to SYSTEM 1.5 for only \$9.95 US funds, original PATCHER disk must be returned. Dump (CONFIG) all current high and/or bank memory data/routines and other current config data, to a disk data file. If your type ahead is active, you can (optional) store text in the type buffer, which is saved. During a boot, the config file is loaded back into high/bank memory, and interrupts are recognized. After executing any active auto command, any stored type ahead data will be output FANTASTIC! Convert your QWERTY keyboard to a DVORAK! Route printer output to the screen or your RS-232. Macro any key, even F1, F2 or F3. Load *01 - *15 overlay(s) into high/bank memory for a memory only DOS! Enter data faster with the 256 byte type ahead option. Run 4 MGHZ error free as clock, disk I/O routines are properly corrected! Spool printing to high/bank memory. Link spooling to disk. (Spooling updates DCB upon entering storage.) Install up to 4 different debugging monitors. Print MS-DOS text files ignoring those unwanted line feeds. Copy, Lprint, List, or CATALOG DOSPLUS, LS-DOS, LDOS or TRSDOS 6.xx files & disks. Add top/bottom margins and/or page numbers to your hard copy. Rename/Redate disks. Use special printers codes eg: LPRINT CHR\$(3); toggles printer output to the ROUTE device. Special keyboard codes add even more versatility. This upgrade improves date file stamping MM/DD/YY instead of just MM/YY. Adds optional verify on/off formatting, enables users to examine *01-*15, DIR, and BOOT sectors using debug, and corrects all known TrsDos 1.3 DOS errors. Upgrade includes LIB/DVR, a /CMD driver that enables LIBRARY commands, such as DIR, COPY, DEBUG, FREE, PURGE, or even small /CMD programs to be used within a running basic program, without variable or data loss!

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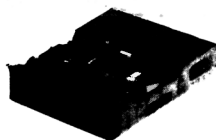
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Can we talk? CP/M vs TRSDOS

By moving to CP/M on your Model 4 you achieve two things. First you open the door to a wealth of existing software. More 8-bit software runs under CP/M than any other operating system. This includes virtually all of the "big name" programs which have set the standards by which all others are measured. Programs like **WordStar**, **dBASE II**, and **Turbo Pascal** are available for CP/M, but not TRSDOS. Public domain software, almost unknown under TRSDOS, fills hundreds of megabytes of disk space. Valuable public domain programs like the **Small C Compiler** are just a toll-free phone call away. Most importantly, hundreds of applications programs are available from a multitude of vendors. Many include the source code. Wouldn't you like to be able to choose from scores of Accounts Receivable or General Ledger programs, instead of the meager selection you now have?

What about the future?

When the time comes to move up to another computer it will almost certainly use MS-DOS. That's when CP/M users get a pleasant surprise. Since MS-DOS was a derivative of CP/M it operates in almost the same manner. Even better, most of the same software packages are available in 16-bit form and they operate in virtually the same way that they did under CP/M.

Is it easy to use?

Montezuma Micro's CP/M has been carefully crafted to present a maximum of features while taking a minimum of memory. It supports all of the standard features of the Model 4/4P/4D computers, as well as most of the optional ones. Our CP/M has been consistently been awarded the highest ratings in industry magazines. It is version 2.2, the most popular and reliable of all the versions of CP/M produced. Our CP/M has been made as easy to use as possible. All customer-selected features are chosen from simple menus in our CONFIG utility. This includes the ability to configure a disk drive to run like that of scores of other CP/M computers for maximum ease of software portability. Using the unique DBLCROSS program in our Monte's Toolkit utility pack-

age you can move files back and forth between CP/M, TRSDOS (1.3 and 6.x), and MS-DOS.

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